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ABSTRACT

In the summer of 1983, a centralized microcomputer laboratory was established on the Sarasota County Vocational Technical Center campus. Computers (IBM PCs, APPLE IIes, and TRS-80s) were installed and the teacher who had written the program proposal was chosen to teach the course of instruction to be offered by the laboratory. When classes began in August of 1983, instructors were strongly encouraged to arrange times for themselves and their students to receive instruction. The curriculum was structured for 12.5 to 15 hours of instruction in computer literacy. The course introduces computer terminology, the computers, their functions, their disk operating systems, and their startup procedures, along with handling of disks and communicating with the computer. Also taught are the concepts of programming, essential commands in BASIC, and other functions. The students then practice using the computers by running and interacting with various public domain sample programs; students end the course by constructing a filing system applicable to their chosen careers. The computer center is planning to develop a software library that may be used by students in the microcomputer center or checked out for later use. The center is also constantly revising the computer literacy course to meet students' needs and suit their abilities. The course has been taken by 85 percent of the students, and 80 percent of those rated it favorably. The program is continuing for a second year. (In addition to a program description, the bulk of this document contains course goals and objectives, a glossary of computer terminology, procedures and BASIC programs, and evaluation results in the form of data tables.) (KC)

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INTEGRATING COMPUTER LITERACY INTO THE VOCATIONAL CURRICULUM

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U.S. DEPARTMENT OF EDUCATION
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presented at
MICROCOMPUTERS AND HIGH TECHNOLOGY IN VOCATIONAL EDUCATION CONFERENCE
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SYNOPSIS OF PRESENTATION

This presentation consists of the following:

1. A slide/tape presentation on the microcomputer center at the Sarasota County Vocational Technical Center, Sarasota, Florida. (Approximately 12 to 15 minutes long.)

2. An oral discussion of how the lab came about and suggested strategies for developing a similar program. (Approximately 10 to 15 minutes long.)

3. A question and answer period.

INTEGRATING COMPUTER LITERACY INTO THE VOCATIONAL CURRICULUM

WHERE WE WERE

In the fall of 1982, one of our staff members attended the Microcomputers in Vocational Education conference in Madison, Wisconsin. Having two and one-half years of experience with microcomputers, she had been interested in seeing them used more in the curricula of the Sarasota County Vocational Technical Center and had discussed the idea with her immediate administrator. Inspired by the conference, and with administrative backing, she wrote a project(1) to address the lack of computer instruction that existed on this campus. Her proposal addressed what she perceived as a problem area in microcomputer education, the lack of a consistent curriculum provided to alleviate the burden put on the educator, particularly the vocational educator.

In the spring of 1983, an administrative decision was made to establish a centralized microcomputer laboratory on the Sarasota County Vocational Technical Center campus. The lab was located in the library as a learning resource to all students, staff and community members. Computers (IBM PC's, APPLE IIe's, and TRS-80's) were chosen and ordered, and the staff member who wrote the proposal was chosen to teach the course of instruction to be offered in this lab. While waiting for the equipment to arrive, renovations turned an office area into an appropriate, attractive and highly visible microcomputer lab. Goals were set for instruction of both students and staff, and software was selected.

1. See MICROCOMPUTERS FOR SARASOTA COUNTY VOCATIONAL CENTER

WHERE WE ARE

Phases one, two and three of our project have been combined in the interest of providing instruction to the student as soon as possible. We began offering classes in August of 1983. Although not mandated to use the lab, instructors were strongly encouraged to arrange times for themselves and their students to receive instruction. The curriculum was structured for 12.5 to 15 hours of instruction in computer literacy, instead of the originally proposed 20 to 30. (Our definition includes only a nodding acquaintance with BASIC programming.) Today's curriculum bears little resemblance to what was first offered, and it is under constant revision to meet student and industry needs.

During the first three hours, we introduce computer terminology(2), the computers, their functions (Processing, Arithmetic Logic, Memory, Input and output), their Disk Operating Systems (DOS), and their startup procedures(3). Also discussed are the handling of disks(4), and the basics of communicating with the computer. During the next three hours students are introduced to the concept of programming(5), the essential command in BASIC, (REM, PRINT, INPUT, GOTO, IF-THEN, and READ-DATA) and the difference between a program listing and a program running. We also use this program to explore the DOS functions (SAVE, LOAD, RUN, DIR/CAT, DELETE/KILL and RENAME). The third day allows for the use additional DOS functions such as disk copy and file copy routines, and disk formatting procedures(6). The fourth session allows the student time for practice using the compters by running and interacting with various public domain sample programs(7). The final day is spent with PFS:FILE (Personal Filing System) which introduces the concepts of Data Base Management using a simple, easy to teach program. Many of the sample public domain programs pertain to various career areas, and each student ends the course by constructing a filing system applicable to his/her chosen trade.

2. See COMPUTER TERMINOLOGY
3. See STARTUP PROCEDURES
4. See HANDLING DISKS PROPERLY
5. See BASIC PROGRAM
6. See BACKUP PROCEDURES.
7. See PUBLIC DOMAIN DISKS

WHERE WE'RE GOING

Additional software that pertains directly to vocational programs is being acquired. The intent is to develop a software library that may be used by students in the microcomputer center, or may be checked out to the classrooms for student use. As our students come to us with computer literacy, it is our intention to adjust the program to concentrate on application software, providing our students with more instruction in the use of programs with which they may have to work.

CONCLUSION

In all, our first year has been very successful. Our staff and students have responded positively, and 85% of our classes have taken advantage of the program. Since December, each student has been asked to fill out an evaluation sheet, and 80%(8) of those responses have been favorable.

In addition, administrative support has been excellent. Not only has our Center Director, Steve Harvey, provided the funding to purchase the computers, but our Business Education Program Director, Shirley Stacey, has been extremely instrumental in the implementation of the program, and in the purchase of the software that is presently housed in the lab. All of the rest of our program directors have been supportive in providing the impetus for their instructors to take advantage of the services offered by the microcomputer lab.

With such a positive beginning, we are looking forward to an even more successful second year.

8. See EVALUATION RESULTS AND SUMMARY.

MICROCOMPUTERS FOR SARASOTA COUNTY VOCATIONAL CENTER

INTRODUCTION

Microcomputers are proliferating throughout industry and education for a number of reasons. The microcomputer of today is as powerful as, and can perform the work of the mainframe of yesterday. The microcomputer's strengths are its size (approximately that of a typerwriter) and its cost (from approximately $300 to $10,000). Its major weaknesses are its slow speed, its limited on-line capacity, and incompatability of software from one machine to another. These weaknesses are being reduced with the advent of the reasonably priced hard disk drive, the introduction of the 16 bit microprocessor, and the publication of translation books that allow programs to be modified to run on other machines.

Businesses that either could not afford, or could not justify, the cost of time-sharing on an expensive mainframe system can afford a microcomputer and enough commercially prepared software (programming) to implement and run their businesses.

1. The automotive repair industry uses microcomputers to monitor customer service records (intervals between service and types of service) and to print post cards to remind customers that service is due on their vehicle.

2. Vast numbers of farmers are using microcomputers in farm management, and 85% of all agriculture classes in the United States either have a microcomputer in their classroom or have access to one.

3. The printing industry uses word processing equipment as input devices to phototypesetters. One inexpensive way to provide students an opportunity to become accustomed to the use of such an input device is through the use of a text processing program and a microcomputer. One printing program in a Wisconsin vocational center is using Zenith microcomputers with the PIE text processor to emulate such input devices. They have interfaced the Zeniths with their phototypesetter with excellent results.

4. Major manufacturing companies use extremely expensive Computer Assisted Design (CAD) and Computer Assisted Manufacturing (CAM) systems. There are at least two CAD-emulating microcomputer programs available now, and another will be available at the end of the year. These

programs provide drafting students an opportunity to gain entry level skills in the manipulation of a CAD system.

5. In order to be a volunteer in Sarasota Memorial Hospital, one needs to be comfortable with a computer keyboard.

6. Most doctor's offices are now using microcomputers (in lieu of on-line mainframe time-sharing) for accounting and budgeting, text processing, billing, financial projection, and patient record maintenance, etc.

7. In other medical fields, microcomputers are being used to analyze laboratory tests and to monitor gas exchanges.

8. Menu managing programs can assist in planning food menus, convert from small quantities to large or vice versa, compute the quantity of each ingredient needed, and print a complete shopping list.

9. Business education students have an opportunity to use programming that might be found on the job (i.e. accounting packages, data base managers, word and text processors, financial projection packages, etc.).

During The month of August, the first MICROCOMPUTERS IN VOCATIONAL EDUCATION conference was held in Madison, Wisconsin. Although the conference planners and participants anticipated that the majority of persons attending would be from business education, at least half were from the industrial and health fields. It became apparent from attending the presentations and engaging in discussions with other persons at the conference that although Florida is second in the nation in the use of microcomputers in the classroom, it is last in the implementation of microcompters in vocational education for purposes other than the teaching of programming.

In the future, a large percentage of our population will be using microcomputers in their vocational areas. Most users will do little or no programming and will outnumber programmers by a significant margin. Persons who do not have entry level skills in the use of a microcomputer will be at a major disadvantage in comparison to those who do. In a very short time, those who do not have such skills will be considered functionally illiterate. We owe it to our students to insure that they will not be functional illiterates and to provide training in those entry level skills that will give them the best chance at employment in today's, and tomorrow's, market.

ORGANIZATION

The most logical organization is a unified approach to the use of microcomputer technology in the curricula of the Sarasota County Vocational Technical Center. Based on the success of the Individual Manpower Training System, it makes sense that specialized instruction in a skill that is both unique and has general application to all instructional areas should be approached through a centralized facility with instruction from an individual who has extensive experience and familiarity with microcomputers and their applications. Microcmputers are general, multi-function, all-purpose machines and are not, and should not become, the sole province of any one discipline. It also makes logical sense that such an approach be considered a service to be offered through the auspices of the Learning Resource Center, since such a centralized facility is a learning resource. This facility should therefore be a part of the Learning Resource Center and be under the direction of the Libraian/Media Specialist in that facility.

IMPLEMENTATION

This project may be seen as a four phase project. The first phase, which could conceivably take a year, can be defined as the transition period. This phase is the period of time necessary to order and set up the hardware, search out and acquire the software, and provide an opportunity for the staff to adjust to and accept the concept of the use of a microcomputer laboratory as a part of their curriculum. During this time, the staff will be encouraged to come to the laboratory and will recieve the same training their students will be given. Primarily, this would be computer literacy. In addition, they would be encourage to seek out software that they feel would be beneficial to their students and curriculum in addition to their being introduced to software available in their field.

The second phase can be seen as the first phase for students. During this phase, students will be brought to the laboratory from each class, on a rotating basis, for instruction in computer literacy. This stage would involve approximately 20 to 30 hours of instruction per student.

The third phase would be the exposure of students to at least one software package that they might use when employed in industry. In the case of medical assistants, this could be a program used to manage a doctor's office; for the auto mechanics student, it might be the vehicle maintenance management program previously mentioned; for the drafting student, it would obviously mean a CADD-emulating program; and for the agriculture student, it would mean a farm management package.

The fourth phase ideally would be the development of Computer Assisted Instruction (CAI) programs that would facilitate the implementation and maintenance of competency based instruction, and Computer Assisted Management (CAM) programs that would allow instructors to manage classroom records in a less cumbersome way. It is possible now to purchase CAI software for basic academic skills for IMTS and Adult Basic Education (ABE). There are also available CAI programs for Table Saw Safety, etc. With the implementation of this plan, Sarasota County Vocational Technical Center will once again prove itself to be the pacesetter for the state of Florida in innovative approaches to vocational education.

SUPPORT

At this time, there are a number of places to which this Center can turn for support. There are two very active local user groups that have formed to assist users of Radio Shack microcomputers (TRS-80 Model I, Model II, Model III, Model 16 and the Color Computer) and the Apple microcomputers (Apple II, Apple III, etc.). In addition, there are various dealers who are very willing to help in any way possible.

EQUIPMENT

In order to reflect the current and future microcomputer marketplace distribution, we should have more than one brand of microcomputer and more than one model of each. The best distribution is probably an even split between Apple and Radio Shack since they share approximately 90% of the market at this time. In addition, because the sixteen (16) bit machine is on the leading edge of technology, some of our machines should be sixteen (16) bit machines. We should have at least one (1) TRS-80 Model 16 and one (1) Apple IV (Lisa) in addition to eleven (11) TRS-80 Model II's and eleven (11) Apple II's or Super II's (if available at the time of purchase). We should also configure our machines in various ways to replicate those configurations that might be found in industry. These configuratios would include dot matrix and letter quality printers, green screen and color monitors, CP/M operating systems, and IBM Personal Computer emulation.

COMPUTER AWARENESS

GOALS:

1. Students should become confident and comfortable when seated at the keyboard of a computer.

2. Students should understand the relevance of computer technology to their chosen occupational field.

OBJECTIVES:

1. The student will demonstrate an understanding of the historical development of computer technology.

   Given a brief narrative of the historical development of computer technology, the student will be able to match individuals with their accomplishments.

2. The student will demonstrate an understanding of the computer Disk Operating System (DOS) and will perform a number of the library/housekeeping functions successfully.

   A. The student will be able to format a blank disk for use in a particular disk drive. (FORMAT/INIT/FORMAT)

   B. The student will be able to duplicate a complete disk. (BACKUP/COPYA/DISKCOPY)

   C. The student will be able to create a file and save it to a disk. (SAVE)

   D. The student will be able to clear the memory of the computer. (NEW)

   E. The student will be able to clear the screen of the computer. (CLS/HOME/CLS)

   F. The student will be able to display the table of contents of a disk in BASIC command mode: (FILES/CATALOG/CMD"D:#) or in System mode: (DIR/CATALOG/DIR)

G. The student will be able to change the name (on the disk) of the program he/she has created. (RENAME)

H. The student will be able to remove (from the disk) the program he/she has saved on that disk. (KILL/DELETE/ERASE)

I. The student will be able to successfully copy one file from one disk to another. (COPY/FILEM/COPY)

3. The student will demonstrate an understanding of computer vocabulary by achieving 80% or better on each of two vocabulary tests.

4. The student will demonstrate an understanding of BASIC commands and concepts and an ability to execute simple BASIC programs.

A. The student will be exposed to and execute a program that displays his/her name on the screen. (PRINT)

B. The student will be exposed to and execute a program that will scroll a text message on the screen. (GOTO)

C. The student will be exposed to and execute a program that contains explanation that does not appear on the screen. (REM)

D. The student will be exposed to and execute a program that hesitates, in order to allow the user to put data into it. (INPUT)

E. The student will be exposed to and execute a program that displays a text message on the screen, hesitates to allow data to be added to the program, and makes a decision. (IF-THEN)

F. The student will be exposed to and execute a program that erases the computer screen, prints a message to the screen and asks for information to be entered. (HOME/CLS)

G. The student will be exposed to and execute a program that reads information from inside the program and displays the information to the screen. (READ-DATA)

H. The student will load (LOAD) a program from a disk, execute (RUN) it, and then display (LIST) the instruction set on the screen.

5. The student will demonstrate the ability to create and use a data base applicable to his/her occupational field.

   A. Given instruction in creating a sample data base, the student will be able to use PFS: FILE to create a data base that is useful in his/her occupational field.

   B. The student will be able to add data to, remove data from, remove forms from, update, and print the data base they have created with PFS: FILE.

6. The student will demonstrate an understanding of the ethics that surround the use of computers.

   A. Given instruction, the student will be able to identify two types of computer crime.

   B. Given instruction, the student will be able to distinguish between ethical and unethical uses of the computer.

COMPUTER TERMINOLOGY

ABACUS - Perhaps one of the earliest devices for storing numbers. Has two sets of columns of beads. They are moved against the divider to indicate the numbers. The ABACUS does no CALCULATIONS itself but helps a person record and therefore remember, numbers as he/she does calculations.

ADDRESS - A location in the COMPUTER's RANDOM ACCESS MEMORY (See RAM). RAM can be compared to a set of mailboxes, each with a unique name and number. If one knows the name and number, it is possible to instruct the COMPUTER to put information there.

ALPHANUMERIC - The ENGLISH alphabet and number system. (A, B, C, etc. 1, 2, 3, etc.)

ALU (Arithmetic Logic Unit) - One of the FIVE MAJOR FUNCTIONS of the COMPUTER. That part of the COMPUTER that carries on arithmetical functions such as addition, subtraction, multiplication, division, and other logical functions.

ANALYTICAL ENGINE - In the 1800's, CHARLES BABBAGE began plans for a general purpose machine that could caluclate a probability table regardless of the length. His design, for the first time, combined the calculating properties of LEIBNITZ'S calculator and the storage properties of JACQUARD'S punched cards. BABBAGE called the machine the ANALYTICAL ENGINE. It was never built because the parts could not be manufactured with the precision needed. However, BABBAGE is often called the "Father of Modern Computing."

APPLICATION SOFTWARE - Programming that is designed to enable the user to perform a specific task or achieve a partricular outcome. (EXAMPLE: WORD PROCESSING.)

ASCII (American Standard Code for Information Interchange) - A way of assigning numerical values to the symbols of the keyboard. Allows programmers to use the values in programming and therefore to use the same programs on different machines.

ASSEMBLER - A translator or interpreter that changes the instructions written in a higher language such as BASIC into BINARY or MACHINE CODE.

BACK-UP - To make a copy of a DISKETTE, usually a data DISKETTE, for the purpose of protecting information that has already been stored. In the event of catastrophe, at least one copy of the information still exists. Saves one from having to re-key information that has been lost.

BAR CODE - A system that represents information in the form of

BAR CODE - A system that represents information in the form of combinations of white and black bars. This code may be found in the grocery store on most product packages in the form of Universal Product Codes (UPC).

BASIC (Beginner's All-purpose Symbolic Instruction Code) - A COMPUTER language whose vocabulary of simple ENGLISH words is used to instruct and program personal COMPUTERs.

BATCH - Applied to data that indicates the processing of large amounts of information, such as the processing of a payroll for a large corporation.

BIT (binary digiT) - A BIT can be thought of as representing the smallest unit of measurement referring to a COMPUTER's MEMORY. Technically, it is the on-off condition of a switch. A BIT is expressed either as ON-OFF, YES-NO, or 1-0.

BOMB - A term used to describe the condition when a program stops working properly.

BOOTING - A term that refers to the start up procedure for a COMPUTER. Usually it means to turn on the DISK DRIVE and load DISK OPERATING SYSTEM (DOS) into the MEMORY of the COMPUTER to prepare it to use a DISK DRIVE.

BRANCHING - The ability of the COMPUTER to use instructions to move from one section of a program to another, depending upon the user's input.

BREAK - To stop a program from running. On the APPLE //, //+, //e, it may be the ESC(ape) key, a combination of the CONTROL and C keys (CONTROL-C), or a combination of the CONTROL and RESET keys (CONTROL-RESET). On the IBM PC, it is a combination of the CTRL (control) and the SCROLL LOCK keys (CTRL-SCROLL LOCK). On the TRS-80, it is the BREAK key.

BUG - Slang used to indicate a problem that keeps a program from running as it should.

BUFFER - A specific amount of RANDOM ACCESS MEMORY (See RAM) that is kept in reserve for the purpose of temporarily storing information until it can be processed.

BYTE (Eight BITS) - A unit of measurement referring to the COMPUTER's MEMORY. A BYTE is the amount of MEMORY used to represent an alphanumeric character. It appears as an eight-place combination of 1's and 0's. EXAMPLE: 00000001.

CAI (Computer Assisted Instruction) - The use of a COMPUTER to assist in the education of school students. CAI may come in several different forms -- DRILL and PRACTICE, TUTORIAL, SIMULATION, ACADEMIC GAMES, and PROBLEM SOLVING.

CATALOG - One way to tell the COMPUTER to instruct the DISK DRIVE to display the table of contents of a particular DISKETTE. May be used when operating APPLE // //+, or //e.

CLS - A command that tells the COMPUTER to clear the screen. It does not clear the COMPUTER's MEMORY, only the screen. May be used with the TRS-80, IBM PC and other COMPUTERs. Not with the APPLE series.

CMD"D:0 or CMD"D:1 - Another way to tell the COMPUTER to instruct the DISK DRIVE to display the table of contents of a particular DISKETTE. May be used when the TRS-80 is in the BASIC command mode.

CMI (Computer Managed Instruction) - The use of a COMPUTER to keep track of students' progress, etc.

COBOL (Common Business Oriented Language) - Another programming language for the specifice purpose of performing business tasks.

COLD BOOT - To turn the COMPUTER on and load DISK OPERATING SYSTEM (See DOS) from the SYSTEM MASTER.

COMPILER - A translator or interpreter that changes the instructions written in a higher language such as BASIC into BINARY or MACHINE CODE.

COMPUTER - An information handling machine that stores, compares, contrasts, changes, manipulates and reports data. It has arithmetical function, that is addition, subtraction, multiplication, division, etc., and follows rules of logic as defined by man. It understands only one thing, the absence or presence of electricity, and all instructions are given to the COMPUTER using representations of switches that are either ON or OFF.

COPY PROTECT - Precautions taken by the programmer and the distributor of SOFTWARE to prohibit users from making copies of a commercial program DISK.

COURSEWARE - Software that is specifically written for instructional purposes. Its purpose is to present, teach and test specific objectives.

CPU (Central Processing Unit) - The processor that controls all activities that occur within the COMPUTER and its connected devices (peripherals). In a microCOMPUTER, it is referred to as a microprocessor because of its size in relation to the processors in miniCOMPUTERs and mainframe COMPUTERs. This unit acts as the BRAIN of the COMPUTER.

CRASH - A term used to describe the condition when a program stops working properly.

CRT (Cathode Ray Tube) - One of many terms attributed to the display screen or television set used to see the results of the COMPUTER's operations. It is fast becoming a generic term for any input unit that is connected to a display screen.

CURSOR - A lighted area of the screen that tells you where the next character will appear. The term comes from a word that means RUNNER and as you type characters on the screen, the cursor will continually move to the right of those characters, thus RUNNING ahead of what is being typed.

DATA BASE - A set of information that must be organized, filed away, retrieved, altered, referred to, etc. A DATA BASE is made up of FIELDS, RECORDS, and FILES.

DATA DISKETTE - A DISKETTE on which only information is stored. It is used in addition to the DISKETTE that contains the program.

DEBUG - Slang used to refer to the process of searching for, and removing or fixing problems that keep a program from running properly.

DEDICATED - Programmed to perform only certain functions and unable to have that programming changed. (EXAMPLES: Digital watch, microwave oven timer, video cassette timer, calculator, etc.)

DEFAULT - An alphanumeric value that has been written into the program by the programmer. It may be changed by the user to fit his/her needs, or may be left alone to automatically be used by the program.

DEFERRED - A programming mode that uses line numbers so that the program will be retained in MEMORY and will be executed when the command RUN is given to the COMPUTER.

DELETE - One of the commands that instructs the COMPUTER to tell the DISK DRIVE to locate the name of a particular item of information in the table of contents of the DISKETTE and to ERASE that name. May be used with the APPLE //, //+, and //e. May also be used in the abbreviated form DEL with the IBM PC.

DIR (DIRectory) - One way to tell the COMPUTER to instruct the DISK DRIVE to display the table of contents of a particular DISKETTE. May be used by the TRS-80 when in TRSDOS and the IBM PC when in PC DOS.

DISK - A piece of plastic coated with a metallic oxide substance on which the COMPUTER stores information. A disk may be hard or flexible in nature. A hard disk is generally sealed in an air tight, dust free container, while a flexible disk is housed in a casing that is neither air tight nor dust free.(See DISKETTE and FLOPPY)

DISK DRIVE - A peripheral device connected to a COMPUTER that contains an electromagnetic head that records (WRITES) information from the COMPUTER's MEMORY onto the disk, and plays back (READS) the information into the COMPUTER's MEMORY. This is an external storage device that allows the saving of information that will be used at a later time.

DISKETTE - A 5-1/4 or 8 inch version of a DISK. It is referred to as both a disk or a DISKETTE, and the terms are becoming interchangeable. Originally referred to as DISKETTE because it held much less than a hard disk storage unit.

DOCUMENTATION - Instructions on using a program that are written for the person using the COMPUTER. May be written in book form to accompany the program, contained within the program as messages on the screen, or as REM(arks) (See REM) in the program itself.

DOS (Disk Operating System) - This is the program (set of instructions) that tells the COMPUTER how to operate the DISK DRIVE. If the start up procedure is followed correctly, and the SYSTEM MASTER DISKETTE is used to BOOT the machine, DOS is fed to the PROCESSOR and loaded into the COMPUTER's MEMORY immediately. However, without DOS, the COMPUTER will not know how to use its DISK DRIVE, and information will not be saved.

DRIVER - A program used to make another machine work with the COMPUTER. (EXAMPLE: A printer that was not manufactured to work with the COMPUTER. A program called a DRIVER is written to tell the COMPUTER how to use the printer.)

EDITOR - A program that allows information to be altered without having to retype all of the information.

ENIAC (Electronic Numerical Integrator and Calculator) - The first electronic COMPUTER based on vacuum tubes. Since it used electrical current rather than moving gears and levers, it was much faster. It was developed circa 1945.

ERASE - One of the commands that instructs the COMPUTER to tell the DISK DRIVE to locate the name of a particular item of information in the table of contents of the DISKETTE and to ERASE the name. Used by the IBM PC in PC DOS.

FIELD - One piece of information on a form, or RECORD. A place in a DATA BASE format set aside for a specific piece of information. (EXAMPLE: The line set aside for the entry of the name of an individual. -- NAME: The designation NAME and the space that follows it, make up a field.

FILE - The term that is assigned to items that are saved on a DISKETTE. This may be a program written in BASIC, in MACHINE LANGUAGE, in some other language, or a DOCUMENT saved as TEXT.

FILES 1 - One way to tell the COMPUTER to instruct the DISK DRIVE to display the table of contents of a particular DISKETTE. May be used when the IBM PC is in BASIC or BASICA.

FILES 2 - A group of records that are related to each other and are to be stored in a DATA BASE for future use.

FIRMWARE - Software permanently incorporated in the hardware, usually in ROM. EXAMPLE: The BASIC language.

FLOPPY - A term attributed to 5 1/4 and 8 inch disks that are not firm. They are also referred to as FLEXI-DISKS.

FLOWCHART - A graphic way in which a programmer represents the steps, decisions and operations that a program must contain.

FORMAT - The process the COMPUTER uses to prepare a DISKETTE to be used to store information. During this process, the COMPUTER divides the disk into numbered sections, erases old information from the disk, and sets up a place to be used as a DIRECTORY. The command for the APPLE is INIT which stands for INIT(ialize). For the IBM PC and the TRS-80, the command is FORMAT.

FORTRAN (FORmula TRANslator) - Another programming language for the specific purpose of performing scientific and mathematical function and tasks.

GENERAL PURPOSE - Capable of accepting a variety of sets of instructions, therefore it is able to be programmed by the user to perform whatever functions the user wants. (EXAMPLE: DATA BASE MANAGEMENT, WORD PROCESSING, SPREAD SHEET, ACCOUNTING, etc.)

GOTO - An ENGLISH word that has a RESERVED meaning in BASIC. It is a command that tells the COMPUTER to go elsewhere in the program and to continue executing the program from there. It is one way the COMPUTER can be made to skip over lines of command and execute them out of numerical order. Otherwise, the COMPUTER will execute a program in numerical order.

HARD COPY - A term that refers to inforamtion displayed on media (usually printed by a printer on paper) that may be carried away from the COMPUTER.

HARDWARE - The physical parts of the COMPUTER, the machinery of the system. That which you can SEE, TOUCH, and/or HEAR.

HIGH LEVEL LANGUAGE - Computer programming languages that use ENGLISH words as commands to tell the COMPUTER what to do. These languages require an interpreter so that commands can be reduced into the crude language that COMPUTERs understand. EXAMPLES: FORTRAN, BASIC, COBOL, Pascal, LOGO, etc.

HOLLERITH CARD - For the 1890 census, Herman Hollerith devised a system similar to JACQUARD'S LOOM cards for the purpose of recording and counting the millions of census forms. This was the precursor of the IBM card, and Hollerith was the founder of IBM.

HOME - A command that tells the COMPUTER to clear the screen. It does not clear the COMPUTER's MEMORY, only the screen. May be used on an APPLE //, //+, //e.

IF-THEN - A combination of ENGLISH words that have a RESERVED meaning in BASIC. Sets up a condition that tells the COMPUTER to test "IF" a condition exists and if so, "THEN" go to a specific part of the program and continue executing the program from there.

IMMEDIATE - A progamming mode that does not use line numbers so that the commands will be executed as soon as the RETURN/ENTER key is pressed, and will not be retained in the COMPUTER's MEMORY.

INPUT 1 - An ENGLISH word that has a RESERVED meaning in BASIC. Allows the user to enter data from the keyboard.

INPUT 2 - One of the FIVE MAJOR FUNCTIONS of the COMPUTER. The process of putting information, data or instructions into the COMPUTER. This may be accomplished by use of a cassette recorder, DISK DRIVE, KEYBOARD, graphics tablet, light pen, etc.

INTERFACE - A device that acts as an interpreter and allows the computer to communicate with a peripheral. (EXAMPLE: The DISK DRIVE controller card.)

JACQUARD'S LOOM - In the early 1800's, Joseph Marie Jacquard, a loom maker, perfected a clever method of controlling looms using small cards made of stiff paper. Each card was punched with holes that controlled the action of the hooks on the loom. Each time the card was used, it caused the loom to repeat a pattern in silk. This was the first time a machine operated automatically, and the first time information was stored on punched cards.

KEYBOARD - The NUMBER ONE INPUT device, and it is the most used device for feeding data into the COMPUTER.

KILL - One of the commands that instructs the COMPUTER to tell the DISK DRIVE to locate the name of a particular item of information in the table of contents of a DISKETTE and to ERASE that name. Used with the TRS-80 in TRSDOS without quotation marks (") and with the IBM PC in the BASIC command mode with quotation marks.

LEIBNITZ'S STEPPED RECONNER - In 1694, Gottfried Wilhelm von Leibnitz designed a machine that improved on Pascal's adding machine that could multiply and divide by using addition and subtraction. This was one of many stages that led to the development of the modern COMPUTER.

LET - An ENGLISH word that has a RESERVED meaning in BASIC. Establishes a specific value for a specific variable. EXAMPLE: LET A = 0.

LINE FEED - A term that refers to the advancement of paper to the next line by the printer.

LINE NUMBER - A number allocated at the left side of each line of a program. May begin at any number (as long as it does not exceed the size of the COMPUTER's MEMORY) and have any size increments. The program may also be entered in any order and will be followed by the COMPUTER in numerical order. Traditionally beginning with the number 10 and using increments of 10.

LIST - An ENGLISH word that has a RESERVED meaning in BASIC. This word is used to instruct the COMPUTER to show the contents of its MEMORY. It will cause the COMPUTER to display whatever program is in MEMORY line by line. When you wish to see the listing of the program that is in the COMPUTER's MEMORY, type the word LIST and press the RETURN/ENTER key.

LOAD - An ENGLISH word that has a RESERVED meaning in BASIC. This word is used specifically with a DISK DRIVE or cassette player and instructs the COMPUTER to tell the DISK DRIVE or cassette to find a particular item of information on the DISK or tape and to transmit that information to the COMPUTER's RANDOM ACCESS MEMORY (See RAM). With the IBM PC and the TRS-80, the command is followed by a quotation mark ("). (EXAMPLE: LOAD"XXXX). With the APPLE //, //+, //e, the command is NOT followed by a quotation mark. (EXAMPLE: LOAD XXXX).

LOW LEVEL LANGUAGE - A programming language that addresses the COMPUTER without the use of ENGLISH words. Usually referred to as: 1. ASSEMBLY LANGUAGE which is a collection of abbreviations and nemonic devices that represent commands to the COMPUTER, or 2. MACHINE LANGUAGE (BINARY) which is the use of numerical codes.

MAIN FRAME - A very large COMPUTER that usually occupies a room. It is extremely fast but very difficult to access because it is used primarily to do large batch operations. This is the type of COMPUTER one would find in a large national or international corporation. EXAMPLE: Payrolls for large corporations.

MEMORY - One of the FIVE MAJOR FUNCTIONS of the COMPUTER. A COMPUTER component that stores program instructions and information. There are two types of MEMORY: 1. RANDOM ACCESS MEMORY (See RAM) and, 2. READ ONLY MEMORY (See ROM). Each programming instruction is assigned a unique place used by the COMPUTER's CENTRAL PROCESSING UNIT (See CPU).

MENU - A program that displays the files on a DISK or the functions of a program and allows the user to chose the one they would like to use and execute it with an economy of keystrokes (usually one number or letter).

MICROCOMPUTER - A small COMPUTER that will fit on the top of a desk. Until recently it possessed an 8-bit MICROPROCESSOR but it may now possess a 16-bit or 32-bit MICROPROCESSOR as a CENTRAL PROCESSING UNIT (See CPU).

MINICOMPUTER - A relatively large COMPUTER that generally occupies the a small room. Until recently, it was operated faster than a MICROCOMPUTER and had a great deal more MEMORY. The lines of division between the MINICOMPUTER and MICROCOMPUTER are beginning to disappear. However, you still find the MINICOMPUTER being used by medium sized institutions.

MODEM - A peripheral device that permits one COMPUTER to communicate with another by telephone. This device converts COMPUTER signals into signals that can travel over telephone lines and converts these signals back into signals the COMPUTER understands. There must be a MODEM at each end of the telephone connection. The word is a combination of the words MO(dulate)-DEM(odulate) which is exactly what it does to the signals.

MONITOR - One of many terms attributed to the display screen through which the COMPUTER displays the results of its operations.

NAPIER'S BONES - In 1617, John Napier designed a system of rods to be used to reduce tedious calculations of large numbers. Each rod was sectioned into nine squares; eight squares are divided diagonally. The top square holds a digit. The remaining eight squares in the rod hold the product of multiplying that number by 2,3,4,5,6,7,8 and 9.

NEW - An ENGLISH word that has a RESERVED meaning in BASIC. This word is a command for the COMPUTER to "forget" the programming that exists in RANDOM ACCESS MEMORY (See RAM) and prepare for new programming. It clears the COMPUTER's MEMORY. When used with the TRS-80, it also clears the COMPUTER's screen. It does not clear the COMPUTER's screen on the APPLE //, //+, //e or IBM PC.

OCR (Optical Character Reader) - A device that allows the COMPUTER to read written copy and transmit it to RANDOM ACCESS MEMORY without keying it in from the KEYBOARD.

OFF-LINE - Not connected directly to a COMPUTER or not currently communicating with the COMPUTER.

ON-LINE - Connected directly to a COMPUTER and currently communicating with the COMPUTER.

OPERATING SYSTEM - A set of instructions that allows the COMPUTER to interact with a DISK DRIVE and to create, store, retrieve, alter and re-store ion/ion through the use of a DISK DRIVE.

OUTPUT - One of the FIVE MAJOR FUNCTIONS of the COMPUTER. The process of getting information, data or instructions out of the COMPUTER. May be accomplished with screen (MONITOR), MODEM, DISK DRIVE, printer, cassette player, etc. All are OUTPUT devices.

PASCAL'S ARITHMETIC MACHINE - In 1642, Blaise Pascal developed a machine that mechanically added numbers together. His system was similar to that used today in mechanical clocks and the odometer of an automobile to measure distance driven.

PERIPHERAL - A machine that is connected to a COMPUTER and receives its operating instructions from the COMPUTER. (EXAMPLES: DISK DRIVE, MODEM, graphics tablet, printer, etc.)

PLOTTER - A device that allows the computer to draw graphic representations of data in graphs through the use of an arm and pen point(s).

PRIMARY MEMORY - The COMPUTER's RANDOM ACCESS MEMORY (See RAM.)

PRINT - An ENGLISH word that has a RESERVED meaning in BASIC. This word is used to instruct the COMPUTER to display an item to an OUTPUT device. When you wish to see a word or the result of a computation, you type PRINT before the item you wish to display. If it is text, you enclose the text in quotation marks ("). EXAMPLE: PRINT "XXX".

PRINTER - A peripheral that allows the COMPUTER to produce results that are printed on paper and can be carried away from the COMPUTER. There are LETTER QUALITY, DOT MATRIX, INK JET, LAZER, and THERMAL TRANSFER printers.

PROCESSING - One of the FIVE MAJOR FUNCTIONS of the COMPUTER. When the COMPUTER acts upon the instructions given it within a program, and uses those instructions to perform operations upon information, that is PROCESSING.

PROGRAM - A set of instructions that tells the COMPUTER what to do. A program must be written in a language (such as BASIC) that the COMPUTER understands.

PROMPT - The symbol that accompanies the CURSOR and tells you that the COMPUTER is waiting for your instructions. On the APPLE //, //+, //e, it may be the right hand bracket (]) or the more-than sign (>). On the TRS-80, it is the word READY and the more-than sign (>) when in BASIC, or TRSDOS Ready. On the IBM PC, it is the word OK when in BASIC, and the letter A with a more-than sign (A>) when in PC DOS)

RAM (Random Access Memory) - COMPUTER MEMORY is organized so that any individual portion can be accessed directly or erased. The programming that the operator is using and information that is generated by the user is loaded into RAM. EXAMPLE: A word processing program and the letters generated with it. Information contained in RAM exists in the COMPUTER only while the electrical power is present. (This is the reason for having external storage devices - See DISK and DISK DRIVE). When combined with ROM, MEMORY is one of the FIVE MAJOR FUNCTIONS of the COMPUTER.

READ - DATA - A combination of ENGLISH words that have RESERVED meanings in BASIC. A command that allows all necessary information to be put in one place and to be read from different places in the program without using line number references.

REM (REMark) - An ENGLISH word that has a RESERVED meaning in BASIC. It is used to tell the COMPUTER that what follows is for the programmer or human being reading the program and to ignore it.

RECORD - One form in a file. (EXAMPLE: If a DATA BASE is established for a mailing list, one full name and address entry would make up a RECORD.)

RENAME - The command that instructs the COMPUTER to tell the DISK DRIVE to locate the name of a particular item of information in the table of contents of the diskette and to change that name to another name. SYNTAX varies slightly, but may be used WITH APPLE //, //+, //e, TRS-80 and IBM PC.

ROM (Read Only Memory) - COMPUTER MEMORY used to store and read out fixed instructions. It is permanent and cannot be erased. When combined with RAM, MEMORY constitutes on of the FIVE MAJOR FUNCTIONS of the COMPUTER.

ROUTINE - A part or all of a program that may be repeatedly used by a program to accomplish a particular task.

RUN - An ENGLISH word that has RESERVED meaning in BASIC. This word is used to instruct the COMPUTER to execute a given set of instructions. When you wish a program to be executed, you type the word RUN. When using a DISK DRIVE with the IBM PC and the TRS-80, you combine the command with a quotation mark (").
(EXAMPLE: RUN"XXXX.) With the APPLE //, //+, //e, you DO NOT use the quotation mark. (EXAMPLE: RUN XXX.)

SAVE - An ENGLISH word that has RESERVED meaning in BASIC. This word is used to instruct the COMPUTER to transmit the program in MEMORY to the DISK DRIVE and tells the PROCESSOR to tell the DISK DRIVE to record that information on the diskette giving it a particular name. With the IBM PC and the TRS-80, you combine the command with a quotation mark (") and the name of the program.
(EXAMPLE: SAVE"XXXX.) With the APPLE //, //+, //e, you DO NOT use the quotation mark. (EXAMPLE: SAVE XXXX.)

SCROLLING - The apparent movement of information on the screen up, down, and to the side. In reality, it is the removal of a line, and the reprinting of all information one line higher, lower, or to the side while adding a new line of information.

SECONDARY STORAGE - Media where information can be stored and retrieved. (EXAMPLES: DISKETTE or cassette.)

SOFT COPY - Information displayed (usually on a screen of some type) that may be studied at the COMPUTER but cannot be taken away from the COMPUTER.

SOFTWARE - Programs that make the COMPUTER perform desired functions. Software resides in the COMPUTER's MEMORY and cannot be seen, heard, or touched. SOFTWARE may be stored on DISK, cassette tape, paper, punched cards, or micro chips, etc. The medium (disks, paper, etc.) is not SOFTWARE. The information stored there is the SOFTWARE.

SORTING - The act of arranging information in specific order by categories. COMPUTERs, given the proper SOFTWARE, are capable of performing such sorting activities with extreme rapidity and accuracy.

SPREAD SHEET - A program that provides blank columns and rows that may be named and assigned values through the use of formulae. These formulae may contain values from other columns, etc. IF-THEN projections may be made using such SPREAD SHEET programs.

STRING - A series of letters or numbers intended to be treated as text and not as numerical values.

SUBROUTINE - A set of instructions usually designed as a complete cycle that a COMPUTER may use frequently.

SYNTAX - The vocabulary and punctuation that the COMPUTER understands. SYNTAX ERROR simply refers to the use of terms, punctuation, or a combination there of that the COMPUTER does not understand. When a SYNTAX ERROR is encountered, it means that the COMPUTER did not understand what is typed and has forgotten it. Re-type in the command you wanted and press the RETURN/ENTER key.

SYSTEM SOFTWARE - Programming that enables the COMPUTER to attend to its needs. DISK OPERATING SYSTEM is a form of SYSTEM SOFTWARE. Some SYSTEM SOFTWARE is installed in the computer's READ ONLY MEMORY (See ROM) while other SYSTEM SOFTWARE comes on disk or other media.

UPDATING - making corrections or adding new information to an already existing file, record, program, etc. such as correcting or changing an address.

USER FRIENDLY - Easily used by a person who is not a COMPUTER programmer or technician. A term applied generally to describe SOFTWARE.

VDT (Video Display Terminal) - One of many terms attributed to the display screen through which the COMPUTER displays the results of its operations.

WORD PROCESSING - The act of creating and altering written documents through the use of a specific set of instructions using the COMPUTER to generate text, move it around, delete, insert, etc. ELECTRONIC CUT AND PASTE.

START UP PROCEDURES

APPLE II, II+ & IIe

1. TURN ON the wall switch that corresponds with the table at which you are sitting.

2. LOCATE the disk drive door, and if it is not open, OPEN IT.

3. INSERT THE DISK into Drive 1, (the bottom disk drive) with the label up and closest to you. Remember TO KEEP YOUR THUMB ON THE LABEL.

4. When the disk is seated, CLOSE THE DISK DRIVE DOOR.

5. Locate the machine's power switch by running your hand along the left, back side of the machine. When you have found it, switch it UP.

6. You are now ready to issue commands to the computer.

START UP PROCEDURES

IBM PC

1. TURN ON the wall switch that corresponds with the table at which you are sitting.

2. LOCATE the disk drive door, and if it is not open, OPEN IT.

3. INSERT THE DISK into Drive A, (the left disk drive) with the label up and closest to you. Remember TO KEEP YOUR THUMB ON THE LABEL.

4. When the disk is seated, CLOSE THE DISK DRIVE DOOR.

5. Locate the machine's power switch by running your hand along the right side of the machine toward the back. When you have found it, switch it UP.

6. When asked to enter the date, you may follow the format on the screen. That is, you may type one digit (number) for the month, two for the day and four for the year. You may separate them with a dash (-) which you will find at the top right side of your keyboard, next to the number zero (example: 6-03-1984). DO NOT TYPE THE NAME OF THE DAY as shown on the screen.

7. After you've done that, PRESS THE ENTER/RETURN KEY on the right side of your keyboard. This key looks like an arrow pointing to the left with a tail in the air on the right hand side [<-']. You may also enter the date in the following ways: 6/3/84 and 06-03-1984.

8. If you wish to enter the time, you must follow the format on the screen. That is, you must enter two digits for the hour, minute, and second, and you must separate them with a colon (:) which you will find next to the number zero (example: 15:50:35). After you've done that, PRESS THE ENTER/RETURN KEY. If you wish to bypass the time, PRESS THE ENTER/RETURN KEY.

9. You should now have the message concerning 1.1 IBM PERSONAL COMPUTER DOS on your screen, and the prompt A> . At this time, type the word BASIC and PRESS THE ENTER/RETURN KEY.

10. You are now ready to issue commands to the computer.

START UP PROCEDURES

TRS-80 Model III & IV

1. TURN ON the wall switch that corresponds with the table at which you are sitting.

2. Locate the machine's power switch by running your hand under the right side of the machine. When you have found it, switch it TOWARD YOU.

3. Wait until the red light on the bottom disk drive has gone out, and if the disk drive door is not open, OPEN IT.

4. INSERT THE DISK into Drive zero (the bottom disk drive) with the label up and closest to you. Remember TO KEEP YOUR THUMB ON THE LABEL.

5. When the disk is seated, CLOSE THE DISK DRIVE DOOR.

6. Push the orange RESET button on the right side of your Keyboard.

7. When asked to enter the date, you must follow the format inside the parentheses. That is, you must enter two digits (numbers) for the month, the day, and the year, and you must separate them with a slash (/) which you will find at the very right side of the bottom row of keys on your keyboard (example: 03/03/84). After you've completed this process, PRESS THE ENTER KEY on the right side of your keyboard.

8. If you wish to enter the time, you must also follow the format inside the parentheses again. That is, you must enter two digits for the hour, minute, and second, and you must separate them with a colon (:) which you will find next to the number zero (0) (example: 15:50:35). After you've completed this process, PRESS THE ENTER KEY. If you wish to bypass the time, leave the space blank and PRESS THE ENTER KEY.

9. You should now have the prompt, TRSDOS Ready, on the bottom of your screen. At this time, type the word BASIC and PRESS THE ENTER KEY.

10. When the question "How many files?" appears on the screen, LEAVE IT BLANK AND PRESS THE ENTER KEY.

11. When the question "Memory size?" appears on the screen, LEAVE IT BLANK AND PRESS THE ENTER KEY.

12. You are now ready to issue commands to the computer.

HANDLING DISKS PROPERLY

Cultivate caring, careful habits. Here are some care and handling tips that help to protect your valuable data stored on the Minidisk.

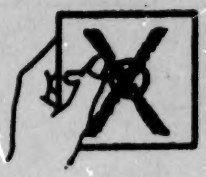
Store the Minidisks in their protective envelopes.

Store the Minidisks vertically.

Shade from direct sunlight.

Protect from extreme fluctuations in temperature or humidity. Storage and operating range: 10°-50°C., 50°-125°F.

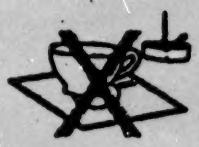
Write only with felt tip pens.



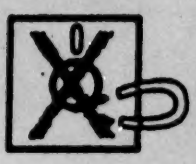
Never touch the surface of the Minidisk.

Never bend or fold.

Never attempt to clean the surface of the Minidisk.



Never eat, drink or smoke in th immediate vicinity.



Never use near magnets or magnetic fields.

COMMUNICATING WITH A COMPUTER

Immediate Mode

Before beginning, type the word NEW to clear the computer's memory, and press the RETURN/ENTER key. If you are operating a TRS-80, this command clears both the memory and the screen of the machine. If you are operating an IBM PC and you wish to clear the screen, type CLS and press the RETURN key. If you are operating an APPLE //e and you wish to clear the screen, type HOME and press the RETURN key.

1. Type any message on the screen and press the RETURN/ENTER key.

2. If you got SYNTAX ERROR on your screen, you did step 1 correctly. The computer does not understand ENGLISH (or any other human language).

3. Type 2+2 and press the RETURN/ENTER key.

4. If your cursor went to the next line without giving you the answer to the problem, you did step 3 correctly. We must give step by step instructions. If we want the computer to give us the answer, we must tell it to, not just to do the function.

5. Type PRINT 2+2 and press the RETURN/ENTER key.

6. If the screen shows the answer to the problem immediatley below the problem and your cursor went to the line below the answer, you did step 5 correctly. PRINT is the command to tell the computer to report the results of processing to an output device, usually the screen.

7. Type PRINT "Your name" and press the RETURN/ENTER key.

8. If the screen shows you name on the next line without the word PRINT or the quotation marks ("), you did step 7 correctly. The quotation marks signify the beginning and the end of the "literal" information we want to have placed on the screen, but not processed as a numeric value.

Deferred Mode

1. Type the word NEW to clear the computer's memory. If you are operating a TRS-80, this command also cleared your screen. If you are operating an IBM PC and you wish to clear the screen type CLS and press the RETURN key. If you are operating an APPLE //e and you wish to clear the screen type HOME and press the RETURN key.

2. If you are looking at a screen that is blank except for the prompt and cursor, you did step 1 correctly. If you are operating a TRS-80, your PROMPT is the word READY with the more-than (>) below it. If you are operating an IBM PC, your PROMPT is the word OK. If you are operating an APPLE //e, your PROMPT is the right hand bracket (])

3. Type the number 10, press the SPACE BAR once, type the word PRINT, press the SPACE BAR once and type a quotation mark ("). Now type a message you would like to see on the screen, and end it with another quotation mark, and press the RETURN/ENTER key. You must press RETURN/ENTER to put the instrucion in the computer's memory.

4. If the computer did not print your message on the screen, you did step 3 correctly.

5. To see your message printed on the screen, type the word RUN, and press the RETURN/ENTER key.

6. If the computer printed your message on the screen without the word PRINT or the quotation marks, you did steps 3 and 5 correctly.

7. Type the number 20, press the SPACE BAR once, type a quotation mark ("), type another message, end it with another quotation mark, and press the RETURN/ENTER key.

8. Now type RUN and press the RETURN/ENTER key.

9. If you see both your messages on the screen, you did steps 7 and 8 correctly.

10. To see the program that is in the computer's memory at this time, type LIST, and press the RETURN/ENTER key.

11. If you see the two lines that you typed into the computer's memory, that is lines 10 and 20, you did step 10 correctly.

12. Type the number 30, press the SPACE BAR once, type the word GOTO and the number 10 and press the RETURN/ENTER key. The command GOTO 10 tells the computer to go back to line 10, and execute the program again from there.

13. Type RUN and press the RETURN/ENTER key. If the you see lines of print scrolling up the screen, you did step 12 correctly.

14. To stop the program from running, you must BREAK out of the program. If you are operating a IBM PC, hold down the CTRL (Control) key on the left hand side of your keyboard, and while holding that key, press the SCROLL LOCK key (CONTROL-SCROLL LOCK) on the right hand side of your keyboard. If you are operating an APPLE IIe, hold down the CONTROL key on the left side of your keyboard, and while holding that key, press the C key (CONTROL-C). If you are operating a TRS-80, press the BREAK key.

15. If the program stopped and you have a message on the bottom of your screen that says BREAK IN #, you did step 14 correctly.

16. We can insert a line into a program out of numerical sequence by typing it and pressing RETURN/ENTER. For example, type the number 5, press the SPACE BAR once, type the word HOME/CLS and press the RETURN/ENTER key. This will enter line 5 into the program; the computer will put it into its correct sequence.

17. Type RUN. If the program begins scrolling the messages from the top of the screen down, instead of from the bottom of the screen up, you did step 16 correctly.

18. Type line 10 again, just as you did before, number 10, quotation mark, message, quotation mark. Place a semi-colon (;) to the right of the last quotation mark, and press the RETURN/ENTER key.

19. Type the number 20 again, do not type anything after it, and press the RETURN/ENTER key.

20. Type RUN and press RETURN/ENTER. If you see your first message moving across the screen, rather than down one side of the screen, and you do not see your second message, you did steps 18 and 19 correctly.

18. Typing a line over, allows you to make corrections. The last line you type will replace what was in the computer's memory before. The semi-colon is punctuation in BASIC that makes the computer continue on the same line. Typing a line number without anything following it deletes the line of command.

```
1   REM  THE WORD REM STANDS FOR REMARK.  IT IS A COMMAND TO THE
    COMPUTER TO IGNORE WHATEVER FOLLOWS BECAUSE IT IS PLACED IN THE
    PROGRAM FOR THE PURPOSE OF REMINDING THE PROGRAMMER OF HIS/HER
    PURPOSE FOR DOING A PARTICULAR THING.

2   REM  REMS ARE ONE WAY THE PROGRAMMER CAN DOCUMENT HIS PROGRAM.

3   REM  TELL THE COMPUTER TO CLEAR THE SCREEN AND BRING THE CURSOR
    TO THE TOP  LEFT HAND POSITION ON THE SCREEN.

4   HOME

5   REM  TELL THE COMPUTER TO PRINT A MESSAGE ON THE SCREEN THAT
    EXPLAINS WHAT THE PROGRAM DOES.

6   PRINT "This is a program that asks questions and displays a
    message that is determined by the answers given.  It is intended
    to demonstrate how computers"

7   PRINT "can be made to appear as though they are responding to the
    individual putting in the information, and can be made to make
    decisions based on certain conditions."

8   REM TELL THE COMPUTER TO PRINT A MESSAGE THAT EXPLAINS HOW TO
    STOP THE PROGRAM, IF DESIRED.

9   PRINT "If you wish to end the program, type 999 when asked 'HOW
    OLD ARE YOU?'"

10  REM  TELL THE COMPUTER TO ASK A QUESTION ON THE SCREEN, WAIT FOR,
    AND ACCEPT AN ANSWER THAT CONSISTS OF LETTERS.

11  REM TELL THE COMPUTER TO MAKE A PLACE (A$)  TO STORE THE ANSWER.
    THE '$' AFTER THE 'A' IS THE COMMAND TO THE COMPUTER THAT PERMITS
    IT TO ACCEPT 'ENGLISH LETTERS' AS INPUT.

12  INPUT "What is your name?";A$

15  REM TELL THE COMPUTER TO ASK A QUESTION ON THE SCREEN, WAIT FOR
    AND ACCEPT AN ANSWER THAT ONLY CONSISTS OF NUMBERS.

16  REM TELL THE COMPUTER TO MAKE A PLACE (B) TO STORE THE ANSWER.
    THE 'B' ALONE IS THE COMMAND TO THE COMPUTER THAT PERMITS IT TO
    ACCEPT NUMBERS ONLY.

20  INPUT "How old are you?";B

23  REM TELL THE COMPUTER TO TEST THE NUMBER ANSWER (B) AND IF IT IS
    EQUAL TO 999, GO TO LINE 300 AND CONTINUE EXECUTING THE PROGAM
    FROM THERE.

25  IF B = 999 THEN 300
```

```
27  REM IF B IS NOT EQUAL TO 999, THEN TELL THE COMPUTER TO TEST THE
    NUMBER ANSWER (B) AND IF IT IS MORE THAN 50, GO TO LINE 200 AND
    CONTINUE EXECUTING THE PROGRAM FROM THERE.

30  IF B > 50 THEN 200

35  REM IF B IS NOT MORE THAN 50, THEN TELL THE COMPUTER TO TEST THE
    NUMBER ANSWER (B) AND IF IT IS LESS THAN 10, GO TO LINE 100 AND
    CONTINUE EXECUTING THE PROGRAM FROM THERE.

40  IF B < 10 THEN 100

45  REM IF B IS BETWEEN 10 AND 50, TELL THE COMPUTER TO CONTINUE TO
    THE NEXT LINE OF THE PROGRAM AND CONTINUE EXECUTING THE PROGRAM
    FROM THERE.

47  REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE IN QUOTATION MARKS.

50  PRINT A$ " You don't look your age."

53  REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

55  PRINT : PRINT : PRINT

57  REM TELL THE COMPUTER TO GO BACK TO LINE 12 AND BEGIN THE PROGRAM
    AGAIN.

60  GOTO 12

65  REM TELL THE COMPUTER WHAT TO DO WHEN B IS LESS THAN 10.

67  REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE INSIDE THE QUOTATION
    MARKS ON LINE 100.

100 PRINT A$ " You're just a baby."

103 REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

105 PRINT : PRINT : PRINT

107 REM TELL THE COMPUTER TO RETURN TO LINE 12 AND BEGIN AGAIN TO
    ALLOW ANOTHER INDIVIDUAL TO ANSWER THE QUESTIONS.

110 GOTO 12

113 REM TELL THE COMPUTER WHAT TO DO WHEN B IS MORE THAN 50.

115 REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE IN QUOTATION MARKS ON
    LINE 200.
```

```
200 PRINT A$ " You look so much younger."

203 REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

205 PRINT : PRINT : PRINT

207 REM TELL THE COMPUTER TO RETURN TO LINE 12 AND BEGIN AGAIN TO
    ALLOW ANOTHER INDIVIDUAL TO ANSWER THE QUESTIONS .

210 GOTO 12

215 REM TELL THE COMPUTER WHAT TO DO WHEN B IS 999

217 REM TELL THE COMPUTER TO PRINT THE NAME GIVEN IN LINE 12, LEAVE A
    SPACE AND REMAIN ON THE SAME LINE.

300 PRINT A$ " ";

301 REM TELL THE COMPUTER TO READ THE INFORMATION STORED AS DATA IN
    LINE 305 AND PRINT THE INFORMATION NEXT TO THE NAME GIVEN IN LINE
    12.

303 READ B$ : PRINT B$

304 REM TELL THE COMPUTER TO MAKE A PLACE TO STORE DATA TO BE READ
    WHEN B IS EQUAL TO 999.

305 DATA          THIS IS THE END OF THE LINE-
                      GOODBYE.

307 REM TELL THE COMPUTER TO STOP RUNNING THE PROGRAM IF IT REACHES
    THIS LINE IN THE PROGRAM.

310 END
```

BASIC PROGRAM - IBM PC/TRS-80

```
1   REM  THE WORD REM STANDS FOR REMARK.  IT IS A COMMAND TO THE
     COMPUTER TO IGNORE WHATEVER FOLLOWS BECAUSE IT IS PLACED IN THE
     PROGRAM FOR THE PURPOSE OF REMINDING THE PROGRAMMER OF HIS/HER
     PURPOSE FOR DOING A PARTICULAR THING.

2   REM  REMS ARE ONE WAY THE PROGRAMMER CAN DOCUMENT HIS PROGRAM.

3   REM  TELL THE COMPUTER TO CLEAR THE SCREEN AND BRING THE CURSOR
     TO THE TOP  LEFT HAND POSITION ON THE SCREEN.

4   CLS

5   REM  TELL THE COMPUTER TO PRINT A MESSAGE ON THE SCREEN THAT
     EXPLAINS WHAT THE PROGRAM DOES.

6   PRINT "This is a program that asks questions and displays a
     message that is determined by the answers given.  It is intended
     to demonstrate how computers"

7   PRINT "can be made to appear as though they are responding to the
     individual putting in the information, and can be made to make
     decisions based on certain conditions."

8   REM TELL THE COMPUTER TO PRINT A MESSAGE THAT EXPLAINS HOW TO
     STOP THE PROGRAM, IF DESIRED.

9   PRINT "If you wish to end the program, type 999 when asked 'HOW
     OLD ARE YOU?'"

10  REM  TELL THE COMPUTER TO ASK A QUESTION ON THE SCREEN, WAIT FOR,
     AND ACCEPT AN ANSWER THAT CONSISTS OF LETTERS.

11  REM TELL THE COMPUTER TO MAKE A PLACE (A$)  TO STORE THE ANSWER.
     THE 'A' AFTER THE 'A' IS THE COMMAND TO THE COMPUTER THAT PERMITS
     IT TO ACCEPT 'ENGLISH LETTERS' AS INPUT.

12  INPUT "What is your name?";A$

15  REM TELL THE COMPUTER TO ASK A QUESTION ON THE SCREEN, WAIT FOR
     AND ACCEPT AN ANSWER THAT ONLY CONSISTS OF NUMBERS.

16  REM TELL THE COMPUTER TO MAKE A PLACE (B) TO STORE THE ANSWER.
     THE 'B' ALONE IS THE COMMAND TO THE COMPUTER THAT PERMITS IT TO
     ACCEPT NUMBERS ONLY.

20  INPUT "How old are you?";B
```

```
23  REM TELL THE COMPUTER TO TEST THE NUMBER ANSWER (B) AND IF IT IS
    EQUAL TO 999, GO TO LINE 300 AND CONTINUE EXECUTING THE PROGAM
    FROM THERE.

25  IF B = 999 THEN 300

27  REM IF B IS NOT EQUAL TO 999, THEN TELL THE COMPUTER TO TEST THE
    NUMBER ANSWER (B) AND IF IT IS MORE THAN 50, GO TO LINE 200 AND
    CONTINUE EXECUTING THE PROGRAM FROM THERE.

30  IF B > 50 THEN 200

35  REM IF B IS NOT MORE THAN 50, THEN TELL THE COMPUTER TO TEST THE
    NUMBER ANSWER (B) AND IF IT IS LESS THAN 10, GO TO LINE 100 AND
    CONTINUE EXECUTING THE PROGRAM FROM THERE.

40  IF B < 10 THEN 100

45  REM IF B IS BETWEEN 10 AND 50, TELL THE COMPUTER TO CONTINUE TO
    THE NEXT LINE OF THE PROGRAM AND CONTINUE EXECUTING THE PROGRAM
    FROM THERE.

47  REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE IN QUOTATION MARKS.

50  PRINT A$ " You don't look your age."

53  REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

55  PRINT : PRINT : PRINT

57  REM TELL THE COMPUTER TO GO BACK TO LINE 12 AND BEGIN THE PROGRAM
    AGAIN.

60  GOTO 12

65  REM TELL THE COMPUTER WHAT TO DO WHEN B IS LESS THAN 10.

67  REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE INSIDE THE QUOTATION
    MARKS ON LINE 100.

100 PRINT A$ " You're just a baby."

103 REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

105 PRINT : PRINT : PRINT
```

```
107 REM TELL THE COMPUTER TO RETURN TO LINE 12 AND BEGIN AGAIN TO
    ALLOW ANOTHER INDIVIDUAL TO ANSWER THE QUESTIONS.

110 GOTO 12

113 REM TELL THE COMPUTER WHAT TO DO WHEN B IS MORE THAN 50.

115 REM TELL THE COMPUTER TO PRINT THE NAME ANSWERED TO THE QUESTION
    ASKED IN LINE 12 AND DISPLAY THE MESSAGE IN QUOTATION MARKS ON
    LINE 200.

200 PRINT A$ " You look so much younger."

203 REM TELL THE COMPUTER TO LEAVE THREE BLANK LINES.

205 PRINT : PRINT : PRINT

207 REM TELL THE COMPUTER TO RETURN TO LINE 12 AND BEGIN AGAIN TO
    ALLOW ANOTHER INDIVIDUAL TO ANSWER THE QUESTIONS .

210 GOTO 12

215 REM TELL THE COMPUTER WHAT TO DO WHEN B IS 999

217 REM TELL THE COMPUTER TO PRINT THE NAME GIVEN IN LINE 12, LEAVE A
    SPACE AND REMAIN ON THE SAME LINE.

300 PRINT A$ " ";

301 REM TELL THE COMPUTER TO READ THE INFORMATION STORED AS DATA IN
    LINE 305 AND PRINT THE INFORMATION NEXT TO THE NAME GIVEN IN LINE
    12.

303 READ B$ : PRINT B$

304 REM TELL THE COMPUTER TO MAKE A PLACE TO STORE DATA TO BE READ
    WHEN B IS EQUAL TO 999.

305 DATA          THIS IS THE END OF THE LINE - GOODBYE.

307 REM TELL THE COMPUTER TO STOP RUNNING THE PROGRAM IF IT REACHES
    THIS LINE IN THE PROGRAM.

310 END
```

MAKING A BACKUP COPY - APPLE

1. Insert the SYSTEM MASTER, DOS 3.3 SYSTEM MASTER DISK, into drive 1. Be sure to close the disk drive door.

2. Type RUN COPYA, and press the RETURN key.

3. The light on Drive 1 will go on and on the screen you'll see APPLE DISK DUPLICATION PROGRAM.

4. Also on the screen you'll see ORIGINAL SLOT: DEFAULT = 6. Press the RETURN key and the message will change to ORIGINAL SLOT: 6. (The computer has several expansion slots. ORIGINAL refers to the disk that you want to make a copy of. The copy program assumes your disk controller card is plugged into slot 6 for the original. A default is any value that is automatically used by a computer system if you don't give another value.)

5. Next you'll see DRIVE: DEFAULT = 1. Press the RETURN key and the message will change to DRIVE: 1. (The copy program assumes you will put the original disk in drive 1.)

6. Next you'll see DUPLICATE SLOT: DEFAULT = 6. Press the RETURN key and the message will change to DUPLICATE SLOT: 6. (DUPLICATE refers to the disk on which you wish to make the copy. The copy program assumes your disk controller card is plugged into slot 6 for the duplicate disk also. This is generally correct since one controller card drives two disk drives.)

7. Next you'll see DRIVE: DEFAULT = 2. Since you have only one disk drive, you will type the number 1 to change from drive 2 to drive 1 for the duplicate disk also. The message will now read DRIVE: 1 (If you had two disk drives, you would press the RETURN key and allow the computer to accept drive 2 as the duplicate drive.)

8. On the bottom of your screen will be a message -- PRESS 'RETURN' KEY TO BEGIN COPY --. At this time, if you were going to copy any other disk, you would remove the SYSTEM MASTER, insert the disk you wished to copy, and press the RETURN key. In this case, since you wish to copy the SYSTEM MASTER, leave it in the disk drive, and press the RETURN key.

9. The light on Drive 1 will go on, and you'll see READING displayed next to ORIGINAL SLOT : 6. This means the computer is reading information from the SYSTEM MASTER into the computer's main memory which temporarily stores as much as it can.

10. Then you'll see INSERT DUPLICATE DISK AND PRESS RETURN on the display. You will now remove the SYSTEM MASTER disk and insert the disk on which you wish to make the copy.

11. You'll see INITIALIZING displayed next to DUPLICATE SLOT : 6. This means the computer is preparing the blank disk to receive information.

12. Then you'll see WRITING displayed next to DUPLICATE SLOT: 6. This means the computer is putting a copy of the information in main memory on the formerly blank disk.

13. Finally, you'll see INSERT ORIGINAL DISK AND PRESS RETURN. You will now exchange disks again, removing the DUPLICATE disk, inserting the SYSTEM MASTER disk, and pressing the RETURN key. The computer will read another portion of the SYSTEM MASTER into memory, and you will see READING again displayed next to ORIGINAL SLOT: 6.

14. When it is done, it will disply the message INSERT DUPLICATE DISK AND PRESS RETURN. You will exchange disks again, removing the SYSTEM MASTER, inserting the disk on which you are making the copy, and pressing the RETURN key. The computer will write the next portion onto the disk, and you will see WRITING again displayed next to DUPLICATE SLOT: 6.

15. Once again, you will see INSERT ORIGINAL DISK AND PRESS RETURN. You will repeat steps 13 and 14 until you see the message DO YOU WISH TO MAKE ANOTHER COPY?

16. If you did wish to make another copy you would answer Y for yes. In this case, you will answer N for no and press the RETURN key.

17. On your screen, you should see the prompt (]) that tells you that the computer is finished following the commands of the program COPYA.

18. You have now completed a backup copy of the SYSTEM MASTER.

MAKING A BACKUP COPY - IBM PC

1. Insert the SYSTEM MASTER, DOS 1.1 IBM PERSONAL COMPUTER, into drive A. Be sure to close the disk drive door.

2. Type DISKCOPY and press the RETURN key.

3. The light on Drive A will go on and on the screen you'll see "Insert source diskette in drive A: Strike any key when ready." (SOURCE refers to the disk that you wish to make a copy of.)

4. At this time, if you were going to copy any other disk, you would remove the SYSTEM MASTER and insert the disk you wished to copy, then you would press any key. In this case, since you wish to copy the SYSTEM MASTER, leave it in the drive and press any key.

5. The light on Drive A will go on, and the computer will read a portion of the source disk into its main memory which temporarily stores as much as it can.

6. Then you'll see the message "Insert target diskette in drive A: Strike any key when ready." (TARGET refers to the disk on which you wish to make the copy.) You will now remove the SYSTEM MASTER disk, insert the disk on which you wish to make the copy, and press any key.

7. The light on drive A will go on again, and you will see "Formatting while copying" displayed on the screen. This means that the computer is preparing the blank disk to receive information before it writes the information in main memory on the formerly blank disk.

8. You'll then see "Insert source diskette in drive A: Strike any key when ready." You will exchange disks, remove the target disk, insert the SYSTEM MASTER in drive A, and strike any key again. The computer will read the next portion into memory.

9. Finally, you'll see "Insert target diskette in drive A: Strike any key when ready." You will again exchange disks, remove the SYSTEM MASTER disk, insert the source disk, and strike any key again. The computer will write the next portion onto the disk, and you will again see "Insert source diskette in drive A: Strike any key when ready."

10. You will repeat steps 8 and 9 until you see the message "Copy

complete. Copy another (Y/N)?

11. If you did wish to make another copy you would answer Y for YES. In this case, you will answer N for NO.

12. On your screen, you should see the prompt (A)) that tells you that the computer is finished following the commands of the program DISKCOPY.

13. You have now completed a backup copy of the SYSTEM MASTER.

MAKING A BACKUP COPY - TRS-80

1. Turn on the machine, and wait for the drive light to go out. Insert the SYSTEM MASTER, MODEL III TRSDOS DISK OPERATING SYSTEM AND BASIC INTERPRETER, into drive zero (0). Be sure to close the disk drive door. Press the orange reset button and enter the date. Bypass the time if you wish by pressing the ENTER key.

2. Type BACKUP, and press the ENTER key.

3. The light on drive zero (0) will go on, and on the screen you'll see the message "Source Drive Number?" Type the number zero (0) and press the ENTER key. (SOURCE refers to the disk that you want to make a copy of. The source drive will almost always be the bottom drive, drive zero [0].)

4. Next you'll see the message "Destination Drive Number?" Type the number zero (0) again and press the ENTER key. (DESTINATION refers to the disk on which you wish to make your copy. The destination drive will be drive 0 if you have only one disk drive, and drive 1 - the top drive - if you have two disk drives.)

5. Next you'll see the message "Source Disk Master Password?" All programs produced by Tandy/Radio Shack use the word PASSWORD for their password. Therefore, you will type the word PASSWORD and press the ENTER key.

6. Flashing on the bottom of your screen will be a message "Insert DESTINATION Diskette (ENTER)". At this time, you will remove the SYSTEM MASTER, insert the disk on which you wish to make a copy, and press the ENTER key.

7. The light on Drive zero (0) will go on, and you may see the message "Diskette contains DATA. Use Disk or not?" The computer is asking if you wish to destroy the information on the disk. (If you knew you had information that you didn't want to destroy, or you didn't know what was on the disk, you could abort the procedure at this time.) In this case, answer Y for yes. (If you do not see the message, do not worry, that means that your disk is completely blank.)

8. You may also see the message "Do you wish to RE-FORMAT?" answer Y for yes and PRESS ENTER. (Again, if you do not see the message, do not worry.)

9. You'll see "Formatting Track # and Verifying Sector #" displayed on your screen. Next to each you will see numbers changing. This means that the computer is preparing the blank disk to receive information.

10. Then you'll see the message Insert SOURCE Diskette <ENTER> flashing on the bottom of your screen. You will exchange disks, remove the destination disk, insert the Source disk, and press the ENTER key.

11. The light on Drive zero (0) will come on, and you will immediatley see the message "Insert DESTINATION Diskette <ENTER>" flashing at the bottom of your screen.

12. You will again exchange disks, remove the SYSTEM MASTER, insert the disk on which you wish to make a copy, and press the ENTER key.

13. The light on Drive zero (0) will come on, and you will immediately see the message "Insert SOURCE Diskette <ENTER>" flashing at the bottom of your screen.

14. You will again exchange disks and press the ENTER key. The light on Drive zero (0) will again come on, and you will see Reading Track # Sector # on your screen and numbers changing next to each one. This means that the computer is reading information from the SYSTEM MASTER into the computer's main memory which temporariiy stores as much as it can.

15. Once again you will see the message "Insert DESTINATION Diskette <ENTER>." You will exchange disks and press the ENTER key. The light on Drive zero (0) will come on again and you will see Writing/Verifying Track # Sector # on your screen and numbers changing next to each one. This means that the computer is writing and checking information from its memory onto the formerly blank disk.

16. When you see the message "Insert SOURCE Diskette <ENTER>" again, you will continue to repeat steps 14 and 15 until you see the message ** Backup Complete **.

17. On your screen, you should see the prompt (TRSDOS Ready) that tells you that the computer is finished following the commands of the program BACKUP.

18. You have now complete a backup copy of the SYSTEM MASTER.

PUTTING FORMAT ON A DISK - APPLE

1. Insert your SYSTEM MASTER diskette into Drive 1. Load the Disk Operating System (DOS) by turning your machine on, or pressing the combination of CONTROL-OPEN APPLE-RESET keys, and then releasing them.

2. The light on Drive 1 will come on. On your screen, you will see the normal greeting telling you about the Apple DOS 3.3.

3. You may now remove your SYSTEM MASTER diskette from Drive 1, and insert the disk that you wish to use with your machine.

4. Type the following lines:

   10 PRINT "THIS IS A STORAGE DISKETTE CREATED BY (insert your name here)"

5. Type INIT HELLO.

6. The light on Drive 1 will come on. When the your cursor returns to the screen, restart your machine again. On your screen you should see the message

   THIS IS A STORAGE DISKETTE CREATED BY (your name).

7. You have prepared a disk so that it can be used by your machine. This is called formatting the disk.

PUTTING FORMAT ON A DISK - IBM

1. Insert your SYSTEM MASTER diskette into Drive A. Load the Disk Operating System (DOS) by turning your machine on, or pressing the combination of CONTROL-ALT-DELETE keys, and then releasing them.

2. The light on Drive A will come on. You will be asked to supply the date and time; do so, or bypass as you wish. On your screen, you will see the normal greeting telling you about the IBM DOS 1.1.

3. Type FORMAT/S and press your RETURN key.

4. The light on Drive A will come on. On your screen you should see the message "Insert new diskette for drive A: and strike any key when ready"

5. Remove your SYSTEM MASTER diskette from Drive A, and insert the disk that you wish to use with your machine, and press your RETURN key.

6. The light on Drive A will come on. On your screen you should see the message "Formatting . . ." and then "Formatting . . . Format complete." Below that, you should see the "# of bytes total disk space" and the "# of bytes available on disk".

7. Below that, you should see the message "Format another (Y/N)?" Type N and press the RETURN key.

8. You have prepared a disk so that it can be used by your machine. This is called formatting the disk.

PUTTING FORMAT ON A DISK - TRS-80

1. Insert your SYSTEM MASTER diskette into Drive zero (0). Load the Disk Operating System (DOS) by turning your machine on, or pressing the RESET.

2. The light on Drive zero (0) will come on. You will be asked to supply the date and time; do so, or bypass as you wish. On your screen, you will see the normal greeting telling you about TRSDOS.

3. Type FORMAT and press your ENTER key.

4. The light on Drive zero (0) will come on. On your screen you may see the message "Format which drive?" Type the number zero (0) and press your RETURN key.

5. On your screen you should see the message DISKETTE NAME? Type SAMPLE and press your ENTER key.

6. On your screen you should see the message PASSWORD? Type PASSWORD and press your ENTER key.

7. On your screen you should see the message "Analyzing diskette." On your screen you may see the message "Disk contains data, use disk or not?" If so, answer Y and press the ENTER key.

8. The light on Drive zero (0) will come on. On your screen you should see the message "Formatting track #" and next to it "Verifying sector #." Below that, you should see the "# flawed tracks" and below that, "Writing System Information."

9. Flashing at the bottom of your screen you should see the message "Insert System Diskette (ENTER)".

10. You have prepared a disk so that it can be used by your machine to store data. This is called formatting the disk.

FILE COPYING PROCEDURES - APPLE

1. Insert your SYSTEM MASTER diskette. Type RUN FILEM and press the RETURN key.

2. The light on Drive 1 will come on. On your screen you should first see the message EXECUTING FID, then a menu with the following choices:
   (1) COPY FILES
   (2) CATALOG
   (3) SPACE ON DISK
   (4) UNLOCK FILES
   (5) LOCK FILES
   (6) DELETE FILES
   (7) RESET SLOT & DRIVE
   (8) VERIFY FILES
   (9) QUIT

WHICH WOULD YOU LIKE?

3. Type the number 1 next to the question mark and press the RETURN key. Your screen will then read COPY FILES. Below that message, will be the question SOURCE SLOT?

4. Type the number 6 next to the question mark and press the RETURN key. Now you will see the question DRIVE?

5. Type the number 1 next to the question mark and press the RETURN key. Now you will see the question DESTINATION SLOT?

6. Type the number 6 next to the question mark and press the RETURN key. Now you will see the question DRIVE?

7. Type the number 1 next to the question and press the RETURN key. (If you had two disk drives, you would type the number 2 in this place.) Now you will see the question FILE NAME?

8. Type the word FID and press the RETURN key. (If you wished to copy any other file, you could type its name in this place.) Now you will see the message INSERT DISK(S). PRESS (ESC) TO RETURN TO MAIN MENU OR ANY OTHER KEY TO BEGIN. (If you wanted to abort this procedure, you could do so now by pressing the ESCape key.) Press the SPACE BAR and you will see the message INSERT SOURCE DISK AND PRESS A KEY.

9. Your SOURCE disk is your SYSTEM MASTER diskette, which is already in Drive 1. Press your SPACE BAR.

10. The light on Drive 1 will come on and you will see the message FILE FID. Below that, you will also see the message INSERT YOUR DESTINATION DISK AND PRESS A KEY. Remove the SYSTEM MASTER diskette from Drive 1 and insert the disk you just INITialized. Press your SPACE BAR.

11. The light on Drive 1 will come on and you will see the message DONE. Below that you will also see the message PRESS ANY KEY TO CONTINUE. Press your SPACE BAR and you will return to the main menu.

12. Type the number 9 next to the question WHICH WOULD YOU LIKE? and press the RETURN key. You are now finished copying one file. If you wanted to make copies of other files, you would use the same procedure. (There are slightly easier procedures for duplicating a number of files from one disk at one time.)

FILE COPYING PROCEDURES - IBM

1. Insert your SYSTEM MASTER diskette. Type COPY SAMPLES.BAS B: and press the RETURN key.

2. The light on Drive A will come on. On your screen you should see the message "Insert diskette for drive B: and strike any key when ready."

3. If you have two disk drives, leave the SYSTEM MASTER in Drive A and put the disk you FORMATted in Drive B. If you have one disk drive, remove your SYSTEM MASTER diskette from Drive A and replace it with the disk you FORMATted. Press your SPACE BAR.

4. The light on Drive A will come on. On your screen you should see the message "1 file(s) copied." Below it you will see the prompt (A)).

5. You have now made a copy of the file SAMPLES.BAS. If you wanted to make copies of other files, you would use the same procedure. (There are slightly easier procedures for duplicating a number of files from one disk at one time.)

FILE COPYING PROCEDURES - TRS-80

1. Insert your SYSTEM MASTER diskette. Type COPY MEMTEST/CMD TESTING/CMD and press the ENTER key.

2. The light on Drive zero (0) will come on. Flashing on your screen you should see the message "Insert SOURCE Disk (ENTER)." Your SYSTEM MASTER diskette is your SOURCE disk. Leave it in Drive zero and press the ENTER key.

3. The light on Drive zero will come on. Flashing on your screen you should see the message "Insert DESTINATION Disk (ENTER)." Remove your SYSTEM MASTER diskette from Drive zero. Replace it with the disk you just FORMATted, and press the ENTER key.

4. The light on Drive zero (0) will come on. Flashing on your screen you should see the message "Insert SOURCE Disk (ENTER)." Exchange disks and press the ENTER key.

5. The light on Drive zero (0) will come on. Flashing on your screen you should see the message "Insert DESTINATION Disk (ENTER)." Exchange disks again and press the ENTER key.

6. The light on Drive zero (0) will come on. Flashing on you screen you should see the message "Insert SOURCE Disk (ENTER)." Exchange disks one last time and press the ENTER key.

7. The light on Drive zero (0) will come on. At the bottom of your screen you should see the prompt (TRSDOS Ready).

8. You have now made a copy of the file MEMTEST.CMD, and its name is TESTING/CMD. If you wanted to make copies of other files, you would use the same procedure. (There are slightly easier procedures for duplicating a number of files from one disk at one time.)

PUBLIC DOMAIN DISKS

IBM PC PROGRAMS

GAME & UTILITIES DISK 1

COMMAND	.COM	CLEAN	.BAS	CLEAN	.DOC	GRTRAX	.COM	GRTRAX	.DOC	GRTRAX	.IBM
SD	.COM	SDHEX	.COM	SDHEX	.DOC	SDHEX	.IBM	FREE1	.BIN	FREE1	.DOC
FREE1	.EXE	FREE3	.COM	FREE3	.DOC	SDIR	.DOC	SDIR	.EXE	SHIFTBS	.COM
SHIFTBS	.DOC	SHIFTIBM	.COM	FD	.COM	FK	.DOC	FREE4	.COM	SYSTAT	.COM
SYSTAT	.DOC	BASICA	.COM	CLEAN	.COM	FREE5	.DOC	PITFALL	.BAS	SIMON	.BAS
LANDER	.BAS	LANDER	.BIN	LANDER	.SCR	ARTILLRY	.BAS				

GAME & UTILITIES DISK 2

COMMAND	.COM	RUBIC	.BAS	TIMDATON	.BAS	RUBIC42	.BAS	FORMGEN	.BAS	CHESS	.BAS
TWINKLE	.BAS	COREDUMP	.BAS	MENU	.BAS	PRINTER	.BAS	CONTENT	.BAT	LCM	.BAS
ZAP'EM	.BAS	TYPER	.BAS	LINES	.BAS	INOUT	.BAS	FORMGEN	.TXT	CONTENT1	.TXT
LCM	.SPC	LUNER	.DAT	METEOR	.DAT	FORTH	.BAS	CLOCK	.BAS	BIGTYPE1	.BAS
RACE	.BAS	EMBEDDED	.BAS	GROWTH	.BAS	LOAN	.BAS	CHEKBK	.BAS	CONTENT2	.TXT
BASICA	.COM										

TRS-80 MODELS III & IV

	DEMO/BAS	CALMAK	VITEX/CMD
STATES	WALLOONS	DEMON	FILE
SCRAMBLE	BIORYTHM	ELIZA/CMD	PINBAL/CMD
CALC	MORTP	MORTBAL	AMORT
WRAP	COMPOUND	RESALE	STEPPED
INTERNAL	MASTER	REALMEN	STARTER/BLD

APPLE CLUB SAMPLE DISKS

DISK #1

FINANCIAL PAC
D/URSA
HAMMURABI
LEMONADE
DNA
D/MUSIC MAKER
ELIZA
NUMEROLOGY
SPEED READING
CALCULATOR START
CALC1
TALK
GEOGRAPHY I
HEART ATTACK TEST
MENU

DISK #2

HELLO
MENU
MARKET.CRASH
MARKET.CRASH.DATA.BASE
SURVIVAL
BUSINESS/FINANCIAL/SERIES
PLANETS/IMPROVED VERSION
SAYINGS
PENDULUM
MUSIC VOICE
MUSIC BACH
SWANEE RIVER
SOLITAIR
GIN RUMMY
GIN RUMMY.X
GIN RUMMY.Y

DISK #3

HELLO
CHECKBOOK BALANCER
DA BIN ICH ...
N.BIN
RUTHER
ALGEBRA 1
CONCENTRATION
STOCK TRADER
FLIPPER
GERMAN
INVERT HI-RES PAGE
PAYMENT CALCULATOR

USING PFS: FILE

1. After your instructor has loaded the master program PFS:FILE into your computer, you should see:

PFS:FILE FUNCTION MENU

1 DESIGN FILE	4 SEARCH/UPDATE
2 ADD	5 PRINT
3 COPY	6 REMOVE

SELECTION NUMBER:

FILE NAME:

Insert the blank disk given to you into Drive 1 for the APPLE //e, Drive zero (0) for the TRS-80 and Drive A for the IBM PC.

2. The first function you will chose is number 1, DESIGN FILE. Type a number 1 next to SELECTION NUMBER: and press your TAB key. (If you are operating an APPLE //e, press the key marked TAB. If you are operating an IBM PC, press the key that has an arrow pointing both right and left. If you are operating a TRS-80, hold down your SHIFT key and press your right arrow (->) key.)

3. If your cursor is now next to FILE NAME: you did step 2 correctly. The name may not be more than eight characters long. If you wish, you may use the name SAMPLE. Type the name next to FILE NAME:

4. Now press CONTROL-C. If you are operating an APPLE //e, hold down your CONTROL key and press the C key. If you are operating an IBM PC, press the F10 key on the left side of your keyboard. If you are operating a TRS-80, hold down your SHIFT key, the DOWN ARROW, and press your C key.

5. If you are now looking at the DESIGN FILE MENU, you did step 4 correctly.

DESIGN FILE MENU

1 CREATE FILE

2 CHANGE DESIGN

SELECTION NUMBER:

6. You have two choices, CREATE FILE or CHANGE DESIGN. We have not created a file so we must do that first. Type the number 1 next to SELECTION NUMBER: and press CONTROL-C.

7. If you are operating an IBM PC, you may see a warning

FILE ALREADY EXISTS

Press ESC to leave it and abandon this operation

Press F10 to delete it and continue

or the light on Drive A may come on and the computer will begin preparing the disk for use with this program and your computer. Either way, you have done step 6 correctly.

8. If you are operating an APPLE IIe, or a TRS-80, you should see a warning:

PUT DISKETTE IN DRIVE 1/0

WARNING

THE DISKETTE IN DRIVE 1/0

WILL BE COMPLETELY OVERWRITTEN

PRESS ESC/BREAK TO ABANDON THIS OPERATION

PRESS CONTROL-C TO CONTINUE

9. Press CONTROL-C again. The light on your disk drive will come on and the computer will begin preparing the disk for use with this program and your computer.

10. If, when the light on your disk drive goes off and you see a screen that is primarily blank with a dotted line at the bottom and a legend:

File: SAMPLE DESIGN Page 1

you did step 9 correctly.

11. On the top line:

    A. Type F. NAME: (This is your first FIELD of information.)
    B. Space approximately 10 spaces, type M.I.: (This is your second FIELD of information.)
    C. Space at least four times, type L. NAME: (Ths is your third FIELD of information.)
    D. Press the RETURN/ENTER key to go to the next line.

12. On the second line, type ADDRESS: (This is your fourth FIELD of information.)

13. On the third line:

    A. Type CITY: (This is your fifth FIELD of information.)
    B. Space approximately half way across the screen, type STATE: (This is your Sixth FIELD of information.)
    C. Space four times, and type ZIP: (This is your seventh FIELD of information.)
    D. Press the RETURN/ENTER key to move to the next line.

14. On the fourth line, type TELEPHONE: (This is your seventh FIELD of information.)

15. If you have the following on the screen:

```
L. NAME:          M.I.:    L. NAME:
ADDRESS:
CITY:                                STATE:    ZIP:
TELEPHONE:
```

File: SAMPLE FORM 1 Page 1

you did steps 11 through 14 correctly.

16. To record your form on the disk, press CONTROL-C.

17. If you are now looking at the PFS: FILE MAIN FUNCTION MENU, you did step 16 correctly.

18. Type the number 2 next to SELECTION NUMBER: and press CONTROL-C.

19. If you are looking at a blank form, with the legend "FORM 1" at the bottom of the screen:

F. NAME: M.I.: L. NAME:
ADDRESS:
CITY: STATE: ZIP:
TELEPHONE:

File: SAMPLE FORM 1 Page 1

you did step 18 correctly.

20. Fill in the form, using your TAB key to move from one FIELD to another. When you have filled in the form, press CONTROL-C to record that form on your disk and obtain another blank form. Continue filling in forms until you have completed approximately 10 forms. Your screen should have the legend "Form 11" at the bottom. When you have reached this point, if you are operating an APPLE //e or an IBM PC, press the ESC(ape) key; if you are operating a TRS-80, press the BREAK key.

21. If you are looking at the PFS:FILE FUNCITON MENU, you did step 20 correctly.

22. To look back at any of the forms you entered, or to make changes, you will need to chose SEARCH/UPDATE. Type the number 4 next to SELECTION NUMBER: and press CONTROL-C. You will be looking at what looks like a blank form. At the bottom you will see the legend RETRIEVE SPEC:

PFS: FILE

F. NAME: M.I.: L. NAME:
ADDRESS:
CITY: STATE: ZIP:
TELEPHONE:

File: SAMPLE RETRIEVE SPEC Page1

This is not a blank form. It is the page on which we can place information to tell the computer to find specific forms with particular information. For example: If you wanted all the forms for people who live in Sarasota, you would type the word Sarasota in the field CITY: (next to CITY:). If you want to look at all the forms, leave this page empty and press CONTROL-C.

23. If you are looking at the last form you entered into your filing system, you did step 22 correctly. Continue to press CONTROL-C for each form until you get to the form you wish to correct. To make a correction, type the new information directly over the old. If you have old information left, use the space bar to erase it. You can continue pressing CONTROL-C until you get to the first form you entered and once more to get to the PFS:FILE FUNCTION MENU. At any time, you can return to the main menu by pressing ESC/BREAK.

24. To print your file, you will need to select PRINT. Type the number 5 next to SELECTION NUMBER: and press CONTROL-C.

25. You should see:

PRINT MENU

1 PRINT FORMS

2 DEFINE PRINT SPEC

SELECTION NUMBER:

26. Type the number 1 next to SELECTION NUMBER: and press CONTROL-C.

27. You should be looking at a blank page, which looks like a blank form. At the bottom, you will see the legend RETRIEVE SPEC.

PFS: FILE

F. NAME: M.I.: L. NAME:
ADDRESS:
CITY: STATE: ZIP:
TELEPHONE:

File: SAMPLE RETRIEVE SPEC Page 1

This RETRIEVE SPEC works justs as the one encountered in SEARCH/ UPDATE.

28. To print all forms, leave this page blank and press CONTROL-C. The next thing you will see is:

PRINT OPTIONS

PRE-DEFINED PRINT SPEC:

PRINT ITEM NAMES (Y/N): N

OUTPUT DEVICE (P/L): P

LINES PER PAGE : 66

NUMBER OF COPIES: 1

29. If you are operating an IBM PC, you will not see PRE-DEFINED PRINT SPEC: on your screen. If you are operating an APPLE //e or TRS-80, leave the choice blank. Everyone will use your TAB key to move to the next item, PRINT ITEM NAMES.

30. Here you may decide whether to tell the computer print NAME:, ADDRESS:, CITY:, etc. along with the names and addresses you typed in by leaving the Y. If you do not want these items printed, change the Y to and N. Tab to the next item, OUTPUT DEVICE:

31. If you are operating an IBM PC, LPT1: is correct, leave it. If you are operating a TRS-80, the P is correct, leave it. If you are operating an APPLE //e, change the P to an L, and tab to the next item, LINES PER PAGE:.

32. This refers not to the number of lines in a standard sheet of paper, (that is 66) but to the number of lines needed to print one form. Your form has 4 lines in it add two lines for double spacing, and you will need 6 lines. Change 66 to 6 and tab to the next item, NUMBER OF COPIES:.

33. If you want more than one copy of each form, you may change number of copies. However, the program will cause the computer and printer to print copies one right after the other. (That is, form 1 will be printed 4 times, then form 2 will be printed 4 times, etc.) When ready, press CONTROL-C.

34. You should be looking at another blank page. (If you have a PRINTER NOT READY message, the machine next to you is on-line (that is, communicating directly) with the computer at this time, and you will have to wait until that machine is finished printing.) If you are ready to print, at the bottom of this page, there should be a legend PRINT SPEC:

F. NAME: M.I.: L. NAME:
ADDRESS:
CITY: STATE: ZIP:
TELEPHONE:

File: SAMPLE PRINT SPEC Page 1

This is where we put codes to tell the computer what kind of format we want to have printed. To alphabetize by last name, put a letter S next L. NAME and press CONTROL-C.

F. NAME: M.I.: L. NAME: s
ADDRESS:
CITY: STATE: ZIP:
TELEPHONE:

File: SAMPLE PRINT SPEC Page 1

35. If the computer printed you forms in alphabetical order by last name, you did steps 26 through 34 correctly. (the S stands for SORT. We don't have to tell the computer how to sort. If it is in a field that has letters in it, it sorts alphabetically. If it is in a field that has numbers in it, it sorts numerically.)

36. To print your file in mailing label format, follow steps 26 through 33. When you get to the PRINT SPEC page, put a plus sign (+) after F. NAME and M.I.. Put an x after L. NAME and ADDRESS. Put a plus sign after CITY, and STATE, and an sx after ZIP. Since we would not want a telephone number in a mailing label, we leave it blank and it will not be printed. (The plus sign tells the computer to stay on the same line to print the next item. The x tells the computer to go to the next line to print the next item. The s tells the computer to sort. This is in a numerical field, it will arrange by numerical order of the Zip Code this time. Since this is the way the post office requires bulk mail to be sorted, we let the computer and software do a time consuming and tedious job much more quickly.)

37. If you see:

```
F. NAME: +        M.I.: +  L. NAME: x
ADDRESS: x
CITY: +                          STATE: +  ZIP: sx
TELEPHONE:
```

```
File: SAMPLE                    PRINT SPEC                    Page 1
```

you did step 36 correctly. Press CONTROL-C to make the printer print out your file in mailing label format and in zip code order.

38. Return to the PFS:FILE FUNCTION MENU. Chose number 1 (DESIGN FILE) and begin to design a file that is applicable to your occupational area.

THE COPYRIGHT LAW

Simply stated, the coyright law allows the owner of a piece of software to make one backup copy of a program for "archival" purposes. That means that one copy may be made and placed on the shelf for use in case the original is destroyed or begins to malfunction. If that happens, the ownere then may use the backup copy for the period of time it take to purchase a new original.

In general, creating unauthorized copies of any copyrighted product, whether computer software or other media, is prohibited by law, and violation of that law carries penalties of stiff fines and/or prison sentences.

During the time you are enrolled in the Computer Applications course, you well not be permitted to duplicate any software that is copyrighted, unless given permission. Where written permission is given, copies may be made for use only in this course, and will be destroyed upon completion of the course.

I CERTIFY BY MY SIGNATURE BELOW, THAT I HAVE READ THIS INFORMATION AND AGREE TO ABIDE BY IT.

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(Signature) (Date)

(One copy to be kept by the student, and one copy to be kept by the teacher.)

A MICRO EXPERIENCE

(Reprinted from the Florida Vocational News
Volume 5, Number 2, December, 1983)

by Myra Whatley and Shirley Stacey

A computer lab, in a Vocational Center, that doesn't teach Data Processing? That's Right!

At Sarasota County Vocational Center, we have installed a microcomputer lab in the Library/Media Center as another of our learning resources. The primary objective for this school year is to meet the challenge issued by Superintendent of Schools James Fox. (The challenge is to insure that all students of the school system be computer literate.)

Determined to achieve this goal, Sarasota County Vocational Center Director, Steve Harvey provided the funds to purchase enough microcomputers to provide hands-on instruction for a maximum of 24 students at a time. Instructors are given a choice of providing the computer literacy as part of their own classroom instruction, or scheduling their classes into the computer lab for a one week mini-course on microcomputer operations.

During the planning stages, major consideration was given to the types of machines and software to be included. Choice of hardware was determined based on survey results that indicated the machines most frequently occuring in the business community. By establishing our choices based on this criteria, we felt our students would be best prepared to enter industry within our community.

Program Director, Shirley Stacey, has made significant contributions to the success of the lab, particularly in placing the lab in the Library/Media Center, thereby maintaining its independence as a resource center and occupationally-related facility.

In the evening, the lab alternately provides training to full-time preparatory programs and doubles as part of the business education program by offering training in the use of commercially-prepared applications software.

Since the lab was installed during this past summer and opened on the first day of the new school year, it has been constantly scheduled for six hours per day. Twenty classes have each received 12.5 hours of instruction.

Handling classes of 24 students all learning basic literacy and machine operation can be extremely difficult. A great deal of credit for support and assistance must go to a volunteer, Charlene Miller. Charlene comes from ICM (Institute for Computer Management)* and has been extremely dependable.

The objectives of the course have undergone significant revisions since August. Although conceived before its writing, they tend to address the areas alluded to in the Wall Street Journal article of September 16, 1983, titled "Courses in Computer Literacy Beginning to Draw Bad Marks." The goals and objectives of this course are as follows:

GOALS:

1. That the student become confident and comfortable when seated at the keyboard of a computer.

2. That the student understand the releveance of computer technology to their chosen occupational field.

OBJECTIVES:

1. The student will demonstrate an understanding of the historical development of computer technology.

2. The student will demonstrate an understanding of the computer Disk Operating System (DOS) and will perform a number of the library/housekeeping functions successfully.

3. The student will demonstrate an understanding of computer vocabulary by achieving 80% or better on each of two vocabulary tests.

4. The student will demonstrate an understanding of BASIC commands and concepts and an ability to execute simple BASIC programs.

5. The student will demonstrate ability to create and use a data base applicable to their occupational area.

Early returns seem to be positive. In a later installment, we'll report on how course content is tailored to the type of class, how objectives have undergone various revisions, and how successful we feel the program has been.

* ICM is a not-for-profit organization with the goal of making the handicapped self-sufficient and productive through the use of microcomputers.

COMPUTER AWARENESS FOR VOCATIONAL STUDENTS
STUDENT INPUT FORM

		POOR	FAIR	GOOD	EXCELLENT
	The teacher's explanations are clear and logical	☐	☐	☐	☐
2.	The teacher displays knowledge of the subject	☐	☐	☐	☐
3.	The teacher's presentations are interesting and enthusiastic	☐	☐	☐	☐
4.	The teacher uses audiovisual material to clarify difficult parts of the topic	☐	☐	☐	☐
5.	The assignments are directly related to the subject matter	☐	☐	☐	☐
6.	The teacher communicates the subject matter in a clear manner	☐	☐	☐	☐
7.	The teacher divides his/her time among students evenly and fairly	☐	☐	☐	☐
8.	The teacher welcomes student questions and provides well-informed answers	☐	☐	☐	☐
9.	The teacher provides activities that permit the student to practice skills presented during the class	☐	☐	☐	☐
10.	The teacher keeps order with a fair hand	☐	☐	☐	☐
11.	The teacher provides students with feedback on their performance	☐	☐	☐	☐
12.	The teacher relates the subject matter to your chosen occupational area	☐	☐	☐	☐

EVALUATION RESULTS AND SUMMARY

CLASSES ATTENDING LAB	POSSIBLE SCORE	TOTAL OF ALL SCORES	PERCENT
DRAFTING 12/83	3840	2875	0.75
LICENSED PRAC NURSING 12/83	6200	5400	0.87
HEALTH SERVICE AIDE 12/84	7200	5285	0.73
AIR CONDITIONING/REFRIG 1/84	4500	3694	0.81
EMER MEDICAL TECHNOLOGY 1/84	3300	2970	0.90
NURSING ASSISTANT 1/84	5520	3805	0.69
SURGICAL TECHNOLOGY 1/84	5520	4200	0.76
MED LAB TECHNOLOGY 1/84	1420	1155	0.81
PARAMEDIC 2/84	2640	2475	0.93
LICENSED PRAC NURSING 2/84	5040	4845	0.96
MACHINE SHOP 2/84	3100	2565	0.83
MARINE MECHANICS 2/84	4560	4235	0.93
COSMETOLOGY 4/84	2640	2225	0.84
NURSERY OPERATIONS 4/84	2620	2095	0.80
EMER MEDICAL TECHNOLOGY 4/84	2160	1830	0.85
NURSING ASSISTANT 4/84	2800	2650	0.92
COSMETOLOGY 5/84	2400	2285	0.95
LICENSED PRAC NURSING 6/84	5260	4215	0.80
TOTAL POSSIBLE SCORE	58360		
TOTAL SCORE		47184	
OVERALL PERCENTAGE			0.81

DRAFTING 12/83 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	16	320	0	10	100	40	250	0.78
2. KNOWLEDGE	16	320	0	0	90	200	290	0.91
3. INTEREST	16	320	5	50	40	120	235	0.73
4. AUDIOVISUAL	16	320	5	50	90	80	225	0.70
5. ASSIGNMENTS	16	320	0	20	135	100	255	0.80
6. CLARITY	14	280	0	20	150	40	210	0.75
7. TIME	14	280	10	30	45	120	205	0.73
8. QUESTIONS	16	320	0	20	105	140	265	0.83
9. ACTIVITIES	16	320	0	0	105	100	205	0.89
10. ORDER	15	300	0	0	135	120	255	0.85
11. FEEDBACK	15	300	0	40	105	40	205	0.68
12. OCCUPATION	16	320	20	30	105	40	195	0.61
		3720						
							2875	
								0.77

LPN 12/83 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	28	560	0	10	225	240	475	0.85
2. KNOWLEDGE	26	520	0	0	185	300	485	0.93
3. INTEREST	28	560	10	30	210	180	430	0.77
4. AUDIOVISUAL	27	540	10	20	255	120	405	0.75
5. ASSIGNMENTS	28	560	0	40	150	280	470	0.84
6. CLARITY	27	540	0	20	225	200	445	0.82
7. TIME	27	540	0	10	165	300	475	0.88
8. QUESTIONS	27	540	0	0	150	340	490	0.91
9. ACTIVITIES	27	540	0	0	165	320	485	0.90
10. ORDER	28	560	0	40	135	300	475	0.85
11. FEEDBACK	25	500	5	50	135	200	390	0.78
12. OCCUPATION	27	540	5	10	180	260	455	0.84
		6500						
							5480	
								0.84

HEAL SERV AIDE 12/83 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	30	600	0	60	315	60	435	0.73
2. KNOWLEDGE	30	600	0	30	165	320	515	0.86
3. INTEREST	30	600	10	160	150	40	360	0.60
4. AUDIOVISUAL	30	600	5	120	100	100	405	0.68
5. ASSIGNMENTS	30	600	5	50	315	60	430	0.72
6. CLARITY	30	600	0	60	225	100	465	0.78
7. TIME	30	600	10	70	255	80	415	0.69
8. QUESTIONS	30	600	5	30	240	200	475	0.79
9. ACTIVITIES	30	600	0	20	180	320	520	0.87
10. ORDER	29	580	0	40	270	140	450	0.78
11. FEEDBACK	30	600	15	80	210	100	405	0.68
12. OCCUPATION	30	600	35	80	135	120	370	0.62
		7180						
							5245	
								0.73

AC/REFRIG 1/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
EXPLANATION	20	400	0	11	105	220	336	0.84
2. KNOWLEDGE	19	380	0	0	45	320	365	0.96
3. INTEREST	19	380	5	50	75	160	290	0.76
4. AUDIOVISUAL	18	360	5	50	75	140	270	0.75
5. ASSIGNMENTS	18	360	5	40	90	140	275	0.76
6. CLARITY	18	360	0	20	30	280	330	0.92
7. TIME	18	360	0	10	105	200	315	0.88
8. QUESTIONS	17	340	0	10	45	260	315	0.93
9. ACTIVITIES		340	0	0	105	200	305	0.90
10. ORDER		360	0	0	105	220	325	0.90
11. FEEDBACK		380	15	0	135	140	290	0.76
12. OCCUPATION	16	360	0	50	90	140	280	0.78
		4380						
							3694	
								0.84

EVAULATION RESULTS AND SUMMARY

EMT 1/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	15	300	0	20	120	100	240	0.80
2. KNOWLEDGE	14	280	0	0	105	140	245	0.88
3. INTEREST	15	300	0	20	120	100	240	0.80
4. AUDIOVISUAL	10	340	0	50	90	140	280	0.78
5. ASSIGNMENTS	15	300	0	20	105	120	245	0.82
6. CLARITY	14	280	0	20	105	100	225	0.80
7. TIME	15	300	0	20	30	220	270	0.90
8. QUESTIONS	14	280	0	0	30	240	270	0.96
9. ACTIVITIES	15	300	0	0	90	180	270	0.90
10. ORDER	16	320	0	0	120	160	280	0.88
11. FEEDBACK	13	260	0	10	60	160	230	0.88
12. OCCUPATION	14	280	15	40	60	60	175	0.63
		3560						
							2970	
								0.83

NURS. ASST. 1/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	23	460	5	40	195	100	340	0.74
2. KNOWLEDGE	23	460	0	30	90	200	400	0.87
3. INTEREST	23	460	10	70	90	160	330	0.72
4. AUDIOVISUAL	22	440	15	70	105	100	290	0.66
5. ASSIGNMENTS	22	440	25	70	105	60	260	0.59
6. CLARITY	23	460	15	40	120	160	335	0.73
7. TIME	22	440	15	70	60	160	305	0.69
8. QUESTIONS	23	460	0	60	60	260	380	0.83
9. ACTIVITIES	22	440	15	30	90	200	335	0.76
10. ORDER	21	420	0	60	150	100	310	0.74
11. FEEDBACK	23	460	20	70	150	40	280	0.61
12. OCCUPATION	23	460	40	70	90	40	240	0.52
		5400						
							3985	
								0.70

SURG TECH 1/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	23	460	5	60	135	140	340	0.74
2. KNOWLEDGE	23	460	0	20	185	280	485	0.88
3. INTEREST	23	460	0	130	90	80	300	0.65
4. AUDIOVISUAL	23	460	5	90	150	60	305	0.66
5. ASSIGNMENTS	23	460	5	20	180	140	365	0.79
6. CLARITY	23	460	0	40	180	140	360	0.78
7. TIME	23	460	0	30	120	240	390	0.85
8. QUESTIONS	23	460	0	20	150	220	390	0.85
9. ACTIVITIES	23	460	0	20	120	260	400	0.87
10. ORDER	23	460	0	20	135	240	395	0.86
11. FEEDBACK	23	460	10	50	135	140	335	0.73
12. OCCUPATION	22	440	15	50	150	80	295	0.67
		5500						
							4200	
								0.78

MEDICAL TECH 2/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	6	120	0	0	45	60	105	0.88
2. KNOWLEDGE	6	120	0	0	30	80	110	0.92
3. INTEREST	6	120	0	0	60	40	100	0.83
4. AUDIOVISUAL	5	100	0	0	45	40	85	0.85
5. ASSIGNMENTS	6	120	0	20	60	0	80	0.67
6. CLARITY	6	120	0	0	60	40	100	0.83
7. TIME	6	120	0	20	30	40	90	0.75
8. QUESTIONS	6	120	0	0	45	60	105	0.88
9. ACTIVITIES	6	120	0	0	30	80	110	0.92
10. ORDER	6	120	0	0	60	40	100	0.83
11. FEEDBACK	6	120	0	0	90	0	90	0.75
12. OCCUPATION	6	120	0	20	60	0	80	0.67
		1420						
							1155	
								0.81

PARAMEDIC 2/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	12	240	0	0	105	100	205	0.85
2. KNOWLEDGE	11	220	0	0	15	200	215	0.98
3. INTEREST	12	240	0	20	90	80	190	0.79
4. AUDIOVISUAL	12	240	0	30	30	140	200	0.83
5. ASSIGNMENTS	12	240	0	10	75	120	205	0.85
6. CLARITY	11	220	0	0	45	160	205	0.93
7. TIME	12	240	0	20	30	160	210	0.88
8. QUESTIONS	11	220	0	0	30	180	210	0.95
9. ACTIVITIES	12	240	0	10	30	180	220	0.92
10. ORDER	12	240	0	0	60	160	220	0.92
11. FEEDBACK	12	240	0	0	75	140	215	0.90
12. OCCUPATION	12	240	5	30	45	100	180	0.75
		2820						
							2475	
								0.88

LPN 2/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	21	420	5	20	150	140	335	0.80
2. KNOWLEDGE	21	420	0	20	75	280	375	0.89
3. INTEREST	21	420	5	70	120	100	295	0.70
4. AUDIOVISUAL	20	420	10	70	60	140	280	0.67
5. ASSIGNMENTS	19	420	0	30	90	200	320	0.76
6. CLARITY	22	420	5	20	105	240	370	0.88
7. TIME	20	420	0	30	60	260	350	0.83
8. QUESTIONS	21	420	0	10	105	260	375	0.89
9. ACTIVITIES	21	420	0	30	90	240	360	0.86
10. ORDER	22	420	5	10	165	180	360	0.86
11. FEEDBACK	21	420	15	30	105	160	310	0.74
12. OCCUPATION	21	420	0	70	105	140	315	0.75
		5040						
							4045	
								0.80

MACHINE SHOP 2/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	12	240	0	0	75	140	215	0.90
2. KNOWLEDGE	13	260	0	0	30	220	250	0.96
3. INTEREST	13	260	0	10	45	180	235	0.90
4. AUDIOVISUAL	12	240	0	0	120	80	200	0.83
5. ASSIGNMENTS	12	240	0	0	105	180	285	0.85
6. CLARITY	12	240	0	10	75	120	205	0.85
7. TIME	12	240	0	10	75	120	205	0.85
8. QUESTIONS	12	240	0	0	45	180	225	0.94
9. ACTIVITIES	12	240	0	0	75	140	215	0.90
10. ORDER	12	240	0	0	105	180	285	0.85
11. FEEDBACK	12	240	0	0	75	140	215	0.90
12. OCCUPATION	12	240	0	20	90	80	190	0.79
		2920						
							2565	
								0.88

MARINE MECH 2/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	19	380	0	0	105	240	345	0.91
2. KNOWLEDGE	19	380	0	0	75	280	355	0.93
3. INTEREST	19	380	0	0	90	260	350	0.92
4. AUDIOVISUAL	19	380	0	0	105	240	345	0.91
5. ASSIGNMENTS	19	380	0	0	60	300	360	0.95
6. CLARITY	19	380	0	0	75	280	355	0.93
7. TIME	19	380	0	0	60	300	360	0.95
8. QUESTIONS	19	380	0	0	90	260	350	0.92
9. ACTIVITIES	19	380	0	0	45	320	365	0.96
10. ORDER	19	380	0	0	60	300	360	0.95
11. FEEDBACK	19	380	0	0	120	220	340	0.89
12. OCCUPATION	19	380	0	0	90	260	350	0.92
		4560						
							4225	
								0.93

COSMETOLOGY 4/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	11	220	0	0	75	120	195	0.89
2. KNOWLEDGE	11	220	0	0	15	200	215	0.98
3. INTEREST	11	220	0	10	75	100	185	0.84
4. AUDIOVISUAL	11	220	0	10	105	60	175	0.80
5. ASSIGNMENTS	11	220	0	0	75	120	195	0.89
6. CLARITY	11	220	0	0	75	120	195	0.89
7. TIME	11	220	0	10	60	120	190	0.86
8. QUESTIONS	11	220	0	0	75	120	195	0.89
9. ACTIVITIES	11	220	0	0	75	120	195	0.89
10. ORDER	11	220	0	10	90	80	180	0.82
11. FEEDBACK	11	220	0	0	120	60	180	0.82
12. OCCUPATION	9	180	9	30	75	20	125	0.69
		2400						
							2225	
								0.84

NURSERY OPER. 4/84 QUESTIONS	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	11	220	0	0	105	80	185	0.84
2. KNOWLEDGE	11	220	0	0	45	160	205	0.93
3. INTEREST	11	220	0	0	120	60	180	0.82
4. AUDIOVISUAL	11	220	5	30	75	40	150	0.68
5. ASSIGNMENTS	11	220	0	30	105	20	155	0.70
6. CLARITY	11	220	0	0	120	60	180	0.82
7. TIME	11	220	0	0	90	100	190	0.86
8. QUESTIONS	11	220	0	0	90	100	190	0.86
9. ACTIVITIES	11	220	0	0	135	40	175	0.80
10. ORDER	11	220	0	0	135	40	175	0.80
11. FEEDBACK	10	200	0	0	135	20	155	0.78
12. OCCUPATION	11	220	5	20	90	40	155	0.70
		2420						
							2095	
								0.80

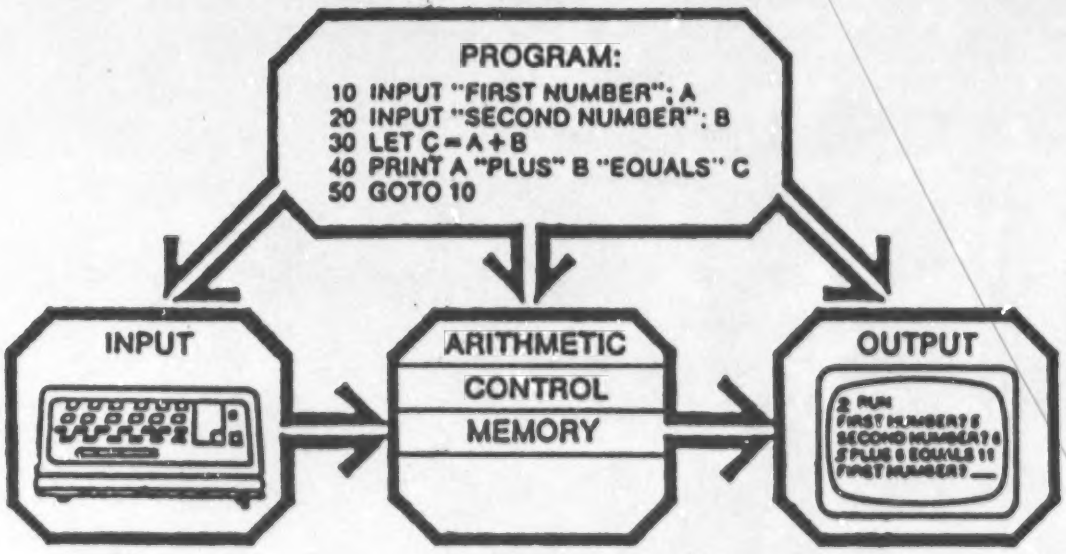
EMT 4/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	9	180	0	0	90	60	150	0.83
2. KNOWLEDGE	9	180	0	0	0	180	180	1.00
3. INTEREST	9	180	0	0	90	60	150	0.83
4. AUDIOVISUAL	9	180	0	10	90	40	140	0.78
5. ASSIGNMENTS	9	180	0	0	105	40	145	0.81
6. CLARITY	9	180	0	10	75	60	145	0.81
7. TIME	9	180	0	0	60	100	160	0.89
8. QUESTIONS	9	180	0	0	15	160	175	0.97
9. ACTIVITIES	9	180	0	0	60	100	160	0.89
10. ORDER	9	180	0	0	105	40	145	0.81
11. FEEDBACK	9	180	0	10	120	0	130	0.72
12. OCCUPATION	9	180	0	10	60	80	150	0.83
		2160						
							1830	
								0.85

NURS ASST 4/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	12	240	0	0	75	140	215	0.90
2. KNOWLEDGE	12	240	0	0	15	220	235	0.98
3. INTEREST	12	240	0	0	90	120	210	0.88
4. AUDIOVISUAL	12	240	0	10	45	160	215	0.90
5. ASSIGNMENTS	12	240	0	10	30	180	220	0.92
6. CLARITY	12	240	0	0	60	160	220	0.92
7. TIME	12	240	0	0	75	140	215	0.90
8. QUESTIONS	12	240	0	0	45	180	225	0.94
9. ACTIVITIES	12	240	0	0	30	200	230	0.96
10. ORDER	12	240	0	0	60	160	220	0.92
11. FEEDBACK	12	240	0	0	45	180	225	0.94
12. OCCUPATION	12	240	0	0	60	160	220	0.92
		2880						
							2650	
								0.92

COSMETOLOGY 5/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	10	200	0	0	30	160	190	0.95
2. KNOWLEDGE	10	200	0	0	30	160	190	0.95
3. INTEREST	10	200	0	0	45	140	185	0.93
4. AUDIOVISUAL	10	200	0	0	30	160	190	0.95
5. ASSIGNMENTS	10	200	0	0	30	160	190	0.95
6. CLARITY	10	200	0	0	15	180	195	0.98
7. TIME	10	200	0	0	15	180	195	0.98
8. QUESTIONS	10	200	0	0	30	160	190	0.95
9. ACTIVITIES	10	200	0	0	30	160	190	0.95
10. ORDER	10	200	0	0	30	160	190	0.95
11. FEEDBACK	10	200	0	10	15	160	185	0.93
12. OCCUPATION	10	200	0	0	15	180	195	0.98
		2400						
							2285	
								0.95

LPN 6/84 QUESTION	number responding	possible score	total p score	total f score	total g score	total e score	total all scores	percent
1. EXPLANATION	22	440	0	40	100	80	320	0.73
2. KNOWLEDGE	22	440	0	0	135	260	395	0.90
3. INTEREST	22	440	5	50	100	80	315	0.72
4. AUDIOVISUAL	22	440	0	30	210	100	340	0.77
5. ASSIGNMENTS	21	420	0	20	150	180	350	0.83
6. CLARITY	22	440	0	50	165	120	335	0.76
7. TIME	22	440	0	40	90	240	370	0.84
8. QUESTIONS	22	440	0	10	120	260	390	0.89
9. ACTIVITIES	22	440	0	20	180	160	360	0.82
10. ORDER	22	440	0	20	195	140	355	0.81
11. FEEDBACK	22	440	0	50	150	140	340	0.77
12. OCCUPATION	22	440	5	20	180	140	345	0.78
		5280						
							4215	
								0.80

•HOW DOES A COMPUTER WORK?•



•HOW DOES A COMPUTER WORK?•